STATE OF OHIO
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGICAL SURVEY

REPORT OF INVESTIGATIONS NO. 30

IN COOPERATION WITH THE
INSTITUTE OF GEODESY, PHOTOGRAMMETRY
AND CARTOGRAPHY
OF THE OHIO STATE UNIVERSITY

GRAVITY SURVEY OF THE STATE OF OHIO

BY

W. A. HEISKANEN AND U. A. UOTILA

COLUMBUS
1956

REPRINTED
1968

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INTRODUCTION

One of the first scientific missions of the Institute of Geodesy, Photogrammetry and Cartography of the Ohio State University was to make an adequate gravity survey of the State of Ohio to fill one of the gaps in the gravity survey of the United States. The study had its inception in January 1953 when a series of laboratory tests were conducted to calibrate the instrument to be used. Actual field observation began in the summer of 1953.

The purpose of this report is to describe the equipment and methods used in the conduct of the survey, to show the basic data collected, and to present gravity maps of Ohio showing both Free-Air and Bouguer anomalies. No attempt is made to interpret the geologic significance of the data. Such interpretations are being undertaken as a separate research project through a grant from the Ohio State University Development Fund under the direction of Professor Howard J. Pincus, and the results of which will be published by the Ohio Division of Geological Survey .

Because the different types of gravimeters will yield an accuracy 20 to 50 times higher than the pendulum apparatus and, the measurements by a gravimeter are 50 times faster than by the pendulum apparatus, it was not difficult to decide what method to use. Encouraged by the positive experiences obtained by different geodesists, particularly by G. P. Woollard of Wisconsin University in his world-wide gravity survey, it was decided to purchase the Worden gravimeter from the Houston Technical Laboratories. Through the Development Fund of the Ohio State University the money needed for the purchasing of this $9,000 instrument was allocated in 1952.

ACKNOWLEDGMENTS

This survey was made possible through the generosity of the Graduate School, the Development Fund, and the Department of Geology. The Graduate School supported a graduate research assistant for three years to carry out the measurements and analyze the results. The Development Fund allocated the money needed for the wage of the field assistant and per diems of the research assistant and his field assistant. The Department of Geology furnished a station wagon for the field work and covered the transportation costs. The Ohio Division of Geological Survey has published this study of three years.

WORDEN GRAVIMETER

The Worden gravimeter Model No. 126 (See Figure 1) is a so-called geodetic gravimeter because it can measure large gravity differences (up to 5,000 mgal) which is necessary in the geodetic applications of the gravity observations. It has two dials: a big dial which can be removed and a small dial. Both dials are used where large gravity differences exist. Where gravity differences are rather small, the small dial is utilized. The range of the small dial is about 70 mgal and the reading accuracy is 0.01 mgal.

The Worden gravimeter belongs to the family of unstable gravimeters. In this type the force of gravity is kept in unstable equilibrium with the restoring force by a third force which enlarges the effect of any change in gravity from its equilibrium value (Figures 2 and 3). The moving system has an arm which is hinged at one end and carries the weight Mg at the other. If the spring were attached to the weight arm the system would be similar to the stable system. In fact, however, the spring is attached to a lever arm E at an angle β with respect to the weight arm W. If the angle β is large, the spring-restoring-torque curve becomes nonlinear. In adjusting the system it is possible to change the angle β so that the restoring torque curve, Figure 3, may intersect the gravitational deflecting torque at different angles φ_1, φ_2, etc. The smaller the angle φ, the greater is the sensitivity of the instrument. When the instrument works close to the instability point $\varphi=0$ its sensitivity is very high.

Several other types of gravimeters are available which give the needed accuracy but their range is only 50 to 200 mgal. This range is adequate for local prospecting purposes only and cannot be used satisfactorily for geodetic measurements. Because of its high accuracy and wide range, the Worden gravimeter is a significant instrument in the geodetic application of the gravimetric method.

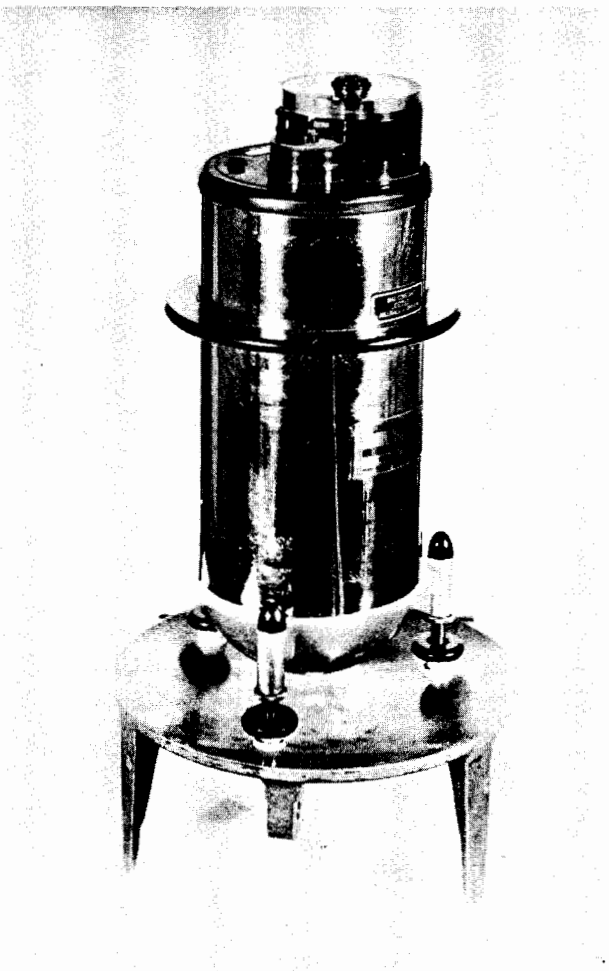

Figure 1. Worden gravimeter.

This gravimeter, as mentioned, is an unstable instrument and employs the zero-length spring (Figure 4). The quartz element has a zero-length spring balanced against the mass very near the point of instability ($\varphi=0$), so that it will elongate or contract even with a very small change in gravity. The gravity differences are determined by returning the spring to its original position by means of a calibrated dial from which the reading is taken. It uses a special device for temperature compensation.

Referring to Figure 5, the proof of the infinite period of the system using a zero-length spring follows:

The weight M is attached to the weight arm W which is pivoted along the hinge line HH. The spring CE is attached to the frame at C and to the arm PE at E, which is equivalent to being attached to the weight arm W since PE and W are rigidly attached along the hinge line HH. τ is the angle between the weight arm and the vertical, and $\tau = 90^\circ - \psi$; PE = PC = a.

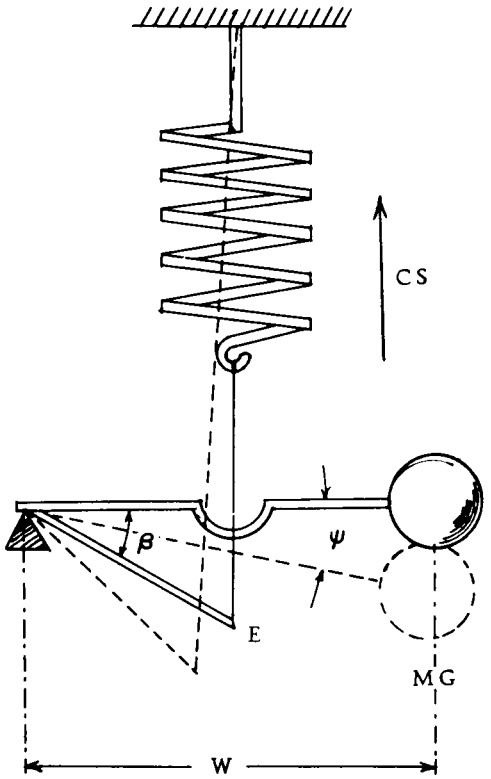

Figure 2. Diagram showing the unstable type of gravimeter.

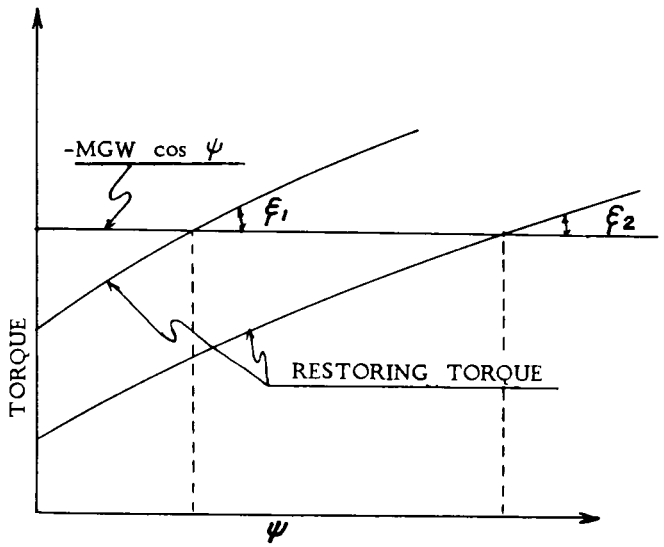

Figure 3. Diagram showing relationship between restoring torque curve and angle in the unstable gravimeter.

The torque produced by M is: $Tm = -MW \sin \tau$. The sign of this torque is taken as negative since it opposes the action of the spring. The torque exerted by the zero-length spring is: $Ts = k \cdot CE \cdot PD$, where PD is the moment arm and k the spring constant. As $\phi = \theta$ and $PD = a \sin \theta$ and $CE = 2a \cos \theta$ we have $Ts = ka^2 \sin 2\theta$.

As C, E, and G are on the arc of a circle, $\theta = 1/2 (\alpha + \gamma)$, and as $\beta = \alpha$ it is $\theta = 1/2 (\beta + \gamma) = 1/2$ and therefore, $Ts = ka^2 \sin \tau$. The total torque is: $Tt = Ts + Tm = (ka^2 - MW) \sin \tau$. If $MW = ka^2$, the total torque is zero and the period is infinite. Since the period is dependent upon the total torque, it can then be adjusted by having torques of slightly different values.

The temperature compensation of the gravimeter is adjusted in both amplitude and linearity of action for equal correction at all temperatures. It is also designed to change amplitude of action with changes in gravity so that the compensation will not vary appreciably with latitude. In addition, all parts of the compensator and spring must change temperature together, making their adjustment somewhat complicated.

As best seen in Figure 6, the temperature compensation structure consists of a pair of arms, 29 and 36b, joined at their extending ends and connected by a spacing arm 37 at their other ends. These arms are made of suitable material having different coefficients of thermal expansion. It will be apparent that a change in temperature will cause the relative lengths of the arms to change, thus creating a force tending to bend or move one or both of the arms 29 and 36b, and thereby moving the extending ends of the arms generally in an arc about the extending ends of arms 29 and 36b; the above described movement of the compensating structure moves the end, or the spring 30 to which it is connected, in such a way as to effectively compensate for the effect of temperature variations on the system.

The above system gives accurately compensating movement through only a very limited temperature range, a difficulty overcome by the addition of a short non-linear spring 36 to an arm of the temperature compensation structure. This spring 36 yields non-linearly to the force produced by the differential expansion in the connected arms, 29 and 36b, resulting in a controlled compensating movement of the extending end over a large temperature range.

The elastic system of the Worden gravimeter is made of fused quartz, which makes it quite resistant to shock and to fatigue, and completely free from all magnetic effect. The basic mass of the quartz used is only 5 mg and the entire system is sealed in a partial vacuum.

The low mass, combined with the almost perfectly elastic qualities of quartz, eliminates the necessity of clamping the system during transport to prevent breakage.

The quartz elastic system of the gravimeter is constructed so that its response to gravity is proportional to the cosine of the angle of tilt. This affords a convenient, accurate, and fundamental means of calibration.

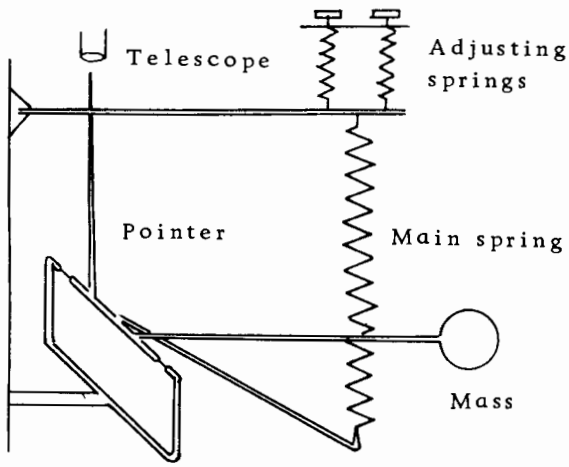

Figure 4. Diagram showing spring system of the Worden gravimeter.

Tilt-table calibration is employed to give consistent calibration from one meter to another. Recent field calibration runs against University of Wisconsin pendulum stations, Dominion Observatory pendulum bases and bases set by the U. S. Coast and Geodetic Survey between Fairbanks, Alaska and Mexico City, indicate tilt calibrations of the Worden gravimeter give "absolute" gravity differences to an accuracy of 1/2000. The small dial is adjusted until it is linear to 1/1000 over its entire scale.

The Worden gravimeter, Figure 1, is 12 cm in diameter, and 29 cm high. The meter itself weighs only about 2.3 kg, and when in the carrying case with base plate attached, only 5.4 kg. This is approximately 1/4 to 1/5 the weight of other gravimeters on the market today. The size of this gravimeter plus the elimination of an external power source needed for thermostat control have given it great portability.

CALIBRATION AND DETERMINATION OF DRIFT

Using a gravimeter it is possible to measure only gravity differences between different observation points, but not the absolute gravity at any point. Therefore, it is necessary to connect the gravimeter observations with some gravity points, measured by other methods. The gravity differences rendered by a gravimeter are not in mgal but in large dial and small dial units of gravimeter. To get gravity differences in mgal two factors must be known: the relationship between small dial and large dial units, which can be determined only by observations; second, the unit of either dial must be given in mgal. The manufacturer has supplied these two values for every gravimeter and they are determined in laboratories using the tilt tables. As these factors change, it is necessary to determine them also by field observations. The larger the gravity differences between the occupied points used in these measurements, the more accurately the factors in question can be obtained.

The most important part of the gravimeters, the springs, have been made of fused quartz. Though the elastic property of this material is very constant, it changes anyway slightly with time so that the readings of the

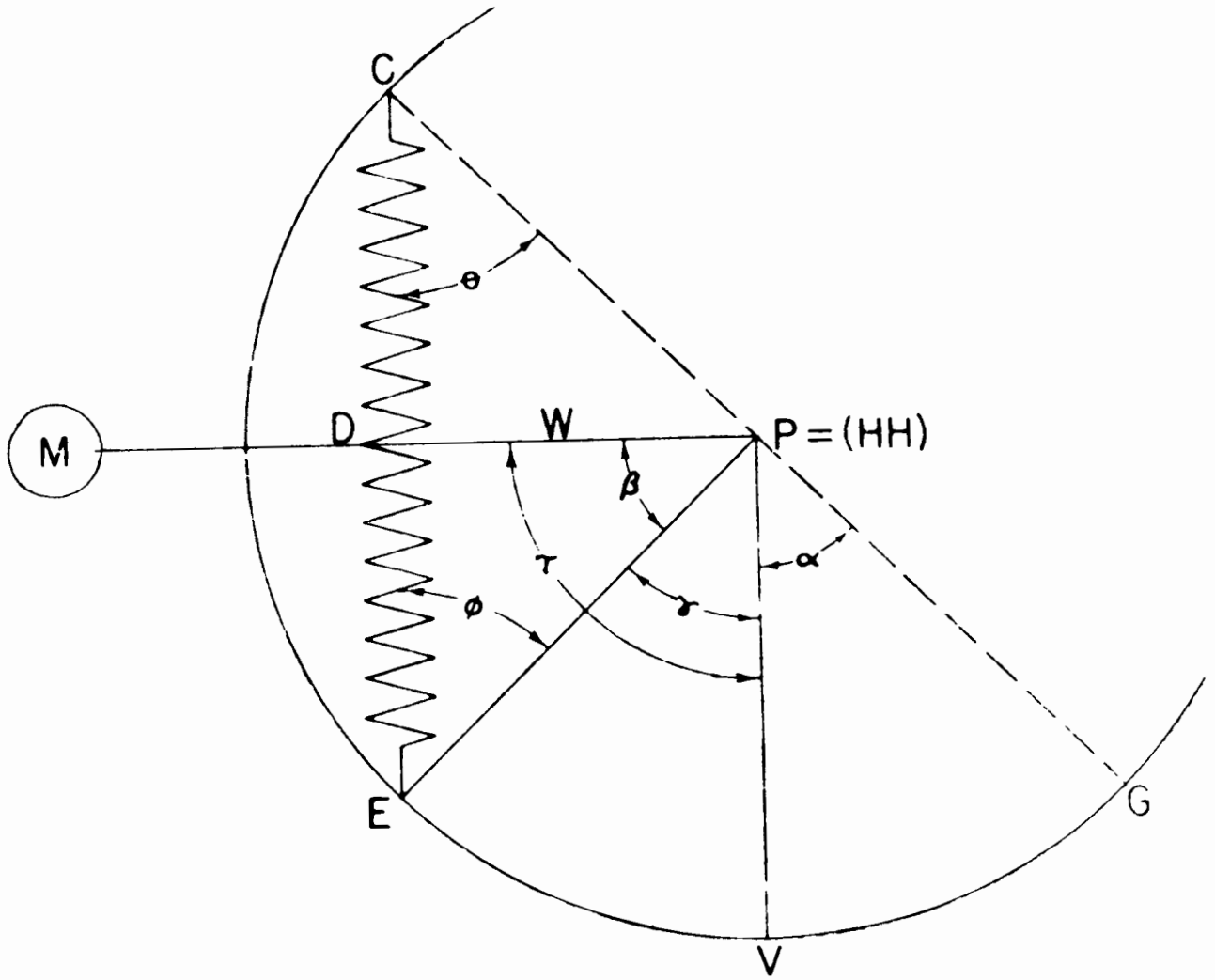

Figure 5. Diagram showing principle of zero-length spring balance. (Houston Technical Laboratories.)

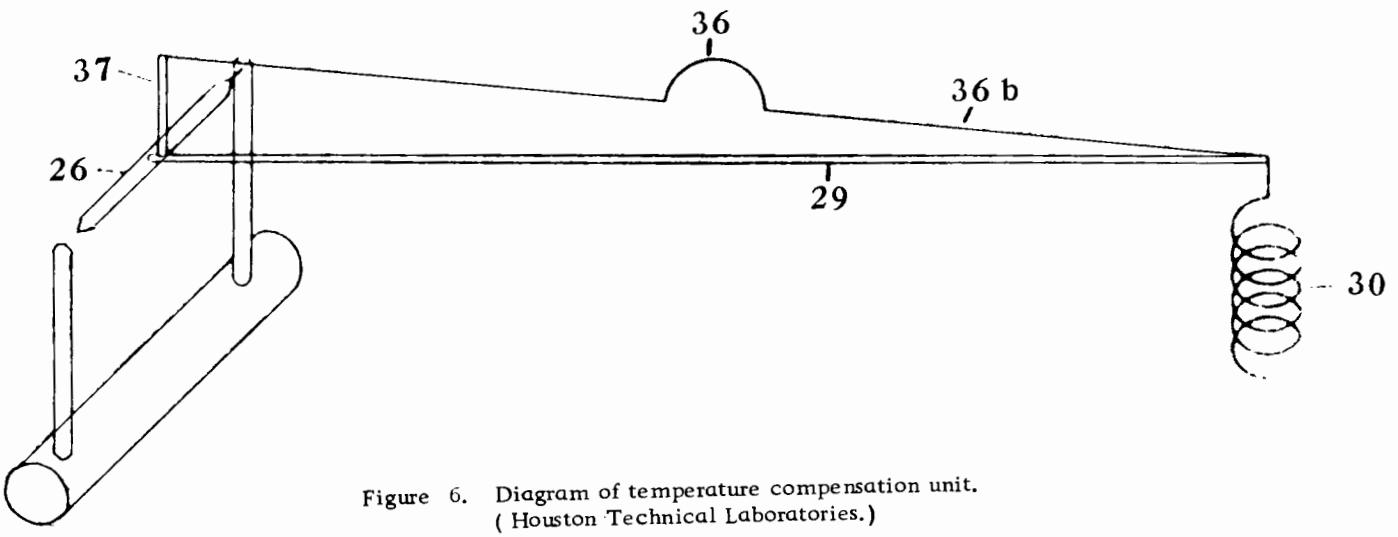

Figure 6. Diagram of temperature compensation unit. (Houston Technical Laboratories.)

gravimeter grow continuously, in our Worden gravimeter about 1 to 10 small dial units per hour. This change of the readings is called the drift of the gravimeter.

Our first thing to do was to study the gravimeter and its characteristics. It was realized that the drift was quite sensitive against the temperature variations. When temperature rose the drift was positive, as is generally the case. If the temperature gradient was negative, as during the night, the drift was less positive or even negative. Therefore, it was clear that to have reliable results, the measurements must be done in loops, meaning that the measuring group must come back at night to the point it started from in the morning.

To get some explanation to this phenomenon of the drift the series of laboratory tests were conducted between October 26 and November 7, 1953. The instrument was standing during the whole period untouched in the Mapping and Charting Research Laboratory building No. 24. Altogether, 119 simultaneous readings of the gravimeter and temperature were made. To get better reading accuracy only the small dial was used. A linear drift 2.99 small dial units per hour, was derived from observations and a graph of residuals was drawn. The measurements indicated also that the accuracy of the instrument is sufficient to measure the periodic effect of moon and sun to the gravity, in other words, the tidal effect of these bodies. The perturbations of this type of the celestial bodies are directly proportional to the mass of the disturbing body and indirectly proportional to the cube of the distance. Consequently, the main disturbing effect is caused by the moon, because it is 389 times nearer the earth than the sun regardless of the fact that the sun's mass is 2.7×10^7 times larger than the mass of the moon. In fact, the perturbation effect of the moon is 2.18 times higher than of the sun. The maximum effect of the moon's perturbation occurs when the moon is in meridian. During the full moon and new moon the moon and sun effects are in the same direction, during first quarter and last quarter in an opposite direction. Consequently, the combined disturbing effect of these celestial bodies has a maximum during the new and full moon and a minimum during the first and last quarter. The ratio of these values is 2.7. The tidal effect reflected clearly from these anomalies and, therefore, theoretical tidal corrections were computed and added to the residuals. Maximum tidal effect was about 0.2 mgal.

When the tidal effect was eliminated there still remained in the graphs relatively large negative slopes. When the residual anomalies were correlated with the temperature changes, between 60° and 72° F, the solution of least squares indicated that a temperature change of $+ 1^\circ$ F increased and -1° F decreased the small dial reading by 3.3 ± 0.2 small dial units. After this temperature factor was taken into account the negative drift during the nights disappeared. The temperature correction was, of course, considered in computing the gravity anomalies from the field measurements.

When gravity differences were computed from observations made during the summer, 1953, the used factors were: 1 large dial unit = 643.5 small dial units and 1 small dial unit = 0.009112 mgal. Before the field work period in the summer, 1954, the instrument was sent to the factory for checking and cleaning. In the factory the inner construction of the instrument was checked and some of the springs were changed causing the following new values to the factors already mentioned: 1 large dial unit = 689.3 small dial units and 1 small dial unit = 0.008741 mgal. The ratio between the large dial and small dial unit turned out to be inconstant and was depending on the position of the large dial. So this ratio was frequently determined at different positions of the large dial during the field work of the summer, 1954. As a result of these tests the ratio 686.8 was used in analyzing the field observations of summer, 1954.

To check the calibration of the gravimeter or, the dial units expressed in mgal, two stations with accurately measured gravity values, Cleveland Municipal Airport with $g = 980.2319$ gal and Atlanta Municipal Airport, Georgia, with $g = 979.5215$ gal, were occupied, and gravity difference measured in the instrument units. The observed gravity difference was 118.6935 large dial units and 710.4 mgal; therefore, 1 large dial unit = 5.98474 mgal and 1 small dial unit = 0.008714 mgal. These values were used in computations of all observations made since the instrument was returned to the Institute.

PROCEDURE OF THE GRAVITY SURVEY OF THE STATE OF OHIO

After a careful study it was decided to make the gravity survey as described in the following paragraphs:

Base Stations

There are nine old pendulum stations in Ohio, but the gravity is not observed at any of these stations as accurately as at Cleveland Municipal Airport, where Dr. Woollard and his group have visited several times with their gravimeters. Therefore this station was chosen as a base station for the whole Ohio gravity survey with observed gravity value 980.2319 gal, which in turn is based on Washington, D. C. Commerce building base g = 980.1190 gal.

This and seventeen additional airports and fields were selected to form a base station net over the state of Ohio. Airfields were preferred because fast air transportation is quite necessary when tying these stations to each other and to the base station. In order to avoid errors caused by irregularities in drift, the base station net was measured in four loops, with an individual loop being completed in one day. The loops were the following:

1. Don Scott - Dayton - Lunken - Raven Rock - Huntington - Athens - Don Scott
2. Don Scott - Dayton - Van Wert - Montpelier - Toledo - Cleveland - Bucyrus - Don Scott
3. Don Scott - Sky Park - Athens - Wood County, West Virginia - Alderman - Cambridge - Don Scott
4. Don Scott - Alderman - Leslie - Youngstown - Cleveland - Wooster - Don Scott

Observations were made very carefully at each station using at least two different readings of the large dial, because the ratio between large and small dial units depends slightly on the reading positions. In the computations a linear drift was assumed after taking account the tidal effect, and using solution of least squares, the inner discrepancies were eliminated from the net. Figure 7 gives closures before adjustment and final results for these primary base stations are given in Table 1.

First-Order Gravity Points

The first-order gravity points were measured along the east-west highways 20, 30, 40, 50, 52 between the airports, which were the primary base stations. All of these highways were run at least twice. The gravity points were chosen at the bench marks of the precise leveling as close as possible to the intersection of the north-south highways. If no bench marks were found, the intersection point of the highways was used. If discrepancies between two measurements at the same point exceeded 0.3 mgal, the points were measured a third time. It was decided to measure this main net in an east-west direction to eliminate the calibration errors of the instrument as completely as possible. These first-order gravity measurements, between the airports, were adjusted using the traveling time spent between the stations as the inverse weight number. After this adjustment the observed gravity values were computed for these points.

Regional Survey

The regional survey was carried out along the north-south highways in the interval of 3 to 5 miles. The measurements were done in loops to get as good drift correction as possible. Every morning the gravity was read

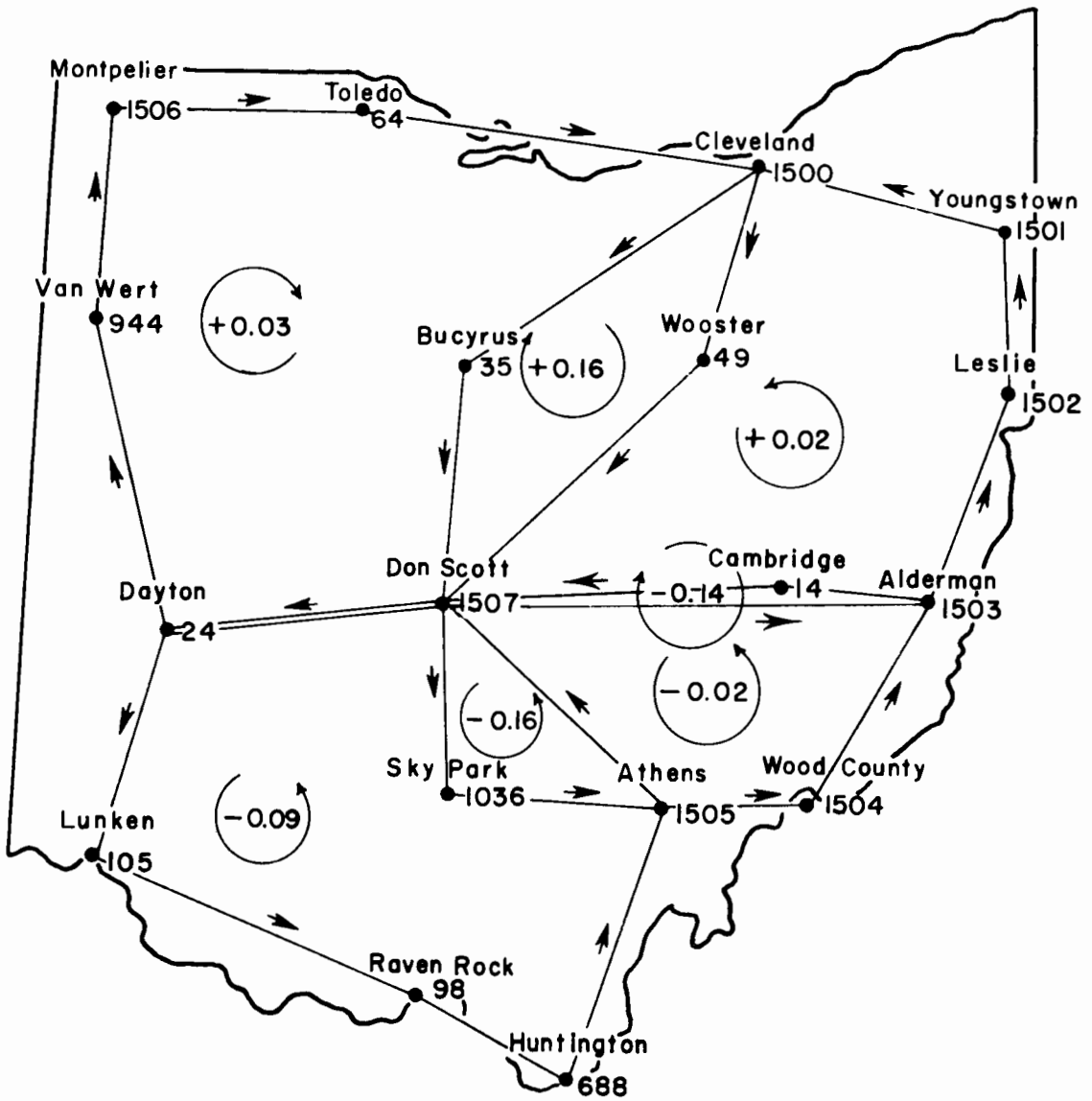

Figure 7. Base station network.

at the starting point and at night another time at the same point. If, for instance, the measuring time of the whole loop was 10 hours and the difference between the morning and night value of gravity was 1 mgal, the hourly drift for that day was 0.1 mgal, of course, assuming that the drift had been constant the whole time. The higher the temperature difference was between the morning and afternoon, the higher was the drift too. The method used allowed the elimination of the combined effect of drift and temperature so accurately that the remaining error brought by this error source seldom was more than 0.1 mgal. In every loop there was at least one first-order gravity station with a known gravity value. After removing a linear drift, the gravity differences were computed, at first in the units of the instrument and then in mgals. Using these gravity differentials and the observed gravity value of the first-order station the final observed gravity values were computed for all observation stations. During the summer, 1953, the average drift was about 4 small dial units per hour, and during the summer, 1954, it was about 9 units per hour.

TABLE 1

Primary Base Stations

Station Number	Name	Difference from Cleveland in mgal	Observed Gravity in gals
1500	Cleveland	-	980.23190
1506	Montpelier	+ 9.22	.24112
64	Toledo	+ 8.80	.24070
1501	Youngstown	- 49.30	.18260
944	Van Wert	- 49.57	.18233
35	Bucyrus	- 88.32	.14358
49	Wooster	- 58.04	.17386
1502	Leslie	-108.52	.12338
24	Dayton	-137.37	.09417
1507	Don Scott	-130.43	.10147
14	Cambridge	-135.93	.09597
1503	Alderman	-165.35	.06655
105	Lunken	-216.05	.01585
1036	Sky Park	-198.93	.03297
1505	Athens	-194.19	.03771
1504	Wood County	-214.85	.01705
98	Raven Rock	-216.15	980.01575
688	Huntington	-260.34	979.97156

Elevation and Position Control

For elevation control, bench marks with accurate elevation data were used, but it was not always possible to establish stations close to bench marks because the distribution of the points was different than the locations of bench marks. Using in those cases the Ohio topographic maps, scale 1:62,500, published by the U. S. Geological Survey, road crossings were chosen as locations of observation points if the elevation of the crossing was given on the Ohio topographic map. Sometimes, even finding this type of road crossing was difficult. In the beginning there was an attempt to use three altimeters, but, having no success, the planned distribution of points was changed rather than use an elevation measured by altimeters. It should be noted that given elevations are not elevations of bench marks or road crossings but elevations of the instrument at the measuring moment.

Locations of the stations were plotted on the topographic maps of Ohio, scale 1 : 62,500, and geographic coordinates were read from these maps.

Reduction of Data

The observed values of gravity are not directly comparable one to another because there is involved the different elevations of the various stations. For instance, the observed value of gravity at a station with a high elevation is too small because the point is farther from the earth's center than the station on a lower elevation. Therefore, before using the observed gravity values for practical purposes or scientific studies, they must be reduced in a proper way to the same level, usually to sea level. This reduction can be done in many ways and in connection with this Ohio gravity survey the used reductions are: free air reduction, Bouguer reduction, and

isostatic reduction. Free air reduction is so named because in this reduction only the elevation of the station is considered, and not the mass between the station and sea level. The used formula is:

$$\text{Free air correction} = + 0.09406 \cdot h$$

where correction is in mgal and h elevation of the station in feet above sea level. The Bouguer reduction accounts for the attraction of the material between the station and sea level. The used average density for this material was assumed to be 2.67 g/cm^3 and so the simple Bouguer correction has the form:

$$\text{Bouguer correction} = -0.03408 \cdot h$$

where the correction is in mgal and the station elevation h in feet above sea level. The Bouguer reduction assumes level topography at the station, so a topographic or terrain correction has still to be computed. It can be estimated by means of the topographic maps. Fortunately, the topography of the state of Ohio is so smooth that— according to the test computations of Endres— the terrain correction is in most part of the state less than 0.5 mgal. In the eastern hilly area it generally does not exceed 1.0 mgal except in the deep valley of the Ohio River where it may reach the value of 3.8 mgal.

At the western boundary of Vinton County, Point No. 1046, the terrain correction is 1.3 mgal; in Belmont County in the Ohio River Valley, Point No. 1114, it was 3.3 mgal; and the largest, 3.8 mgal, was in the same valley in Monroe County, Point No. 1113. The terrain correction has not been considered. In detailed geophysical studies of the eastern hilly area it is, however, wise to compute this correction.

In the Bouguer reduction the topographic mass is disregarded, but in isostatic assumptions it has been transferred under sea level to the root formation. By aid of topographic maps and formulas the isostatic reductions can be computed. Reductions for all stations were computed in the Airy-Heiskanen isostatic system using T-values 20, 30, 40, and 60 km. Usually deviations of reduced gravity values from theoretical values are computed and they are called anomalies. For the computation of theoretical values the International Gravity Formula was used and it reads:

$$\gamma_o = 978.049 \ (1 + 0.0052884 \ \sin^2 \phi \ - \ 0.0000059 \ \sin^2 2\phi)$$

where γ_o is the theoretical value of gravity at sea level for latitude ϕ.

Personnel and Time Table of the Gravity Survey

The gravity survey was conducted under the supervision of Dr. W. A. Heiskanen, Director of the Institute of Geodesy, Photogrammetry and Cartography, by the graduate student U. A. Uotila.

For the fiscal year 1953-54 the research assistant was David Gordon, graduate student, and for the field period, under-graduate student, Charles Zepp, was his field assistant. After a two days' training trip Mr. Gordon measured 74 first-order points along the highways No. 20, 30, 40, 50, 52 and, in addition, he made the regional survey from Lake Erie to highway No. 30 measuring additional 474 stations. During the winter period he computed a part of the gravity differences between measured points. Mr. Uotila made and analyzed the series of laboratory tests checking the effect of the temperature changes to the drift of the gravimeter.

During the fiscal year 1954-55 the research assistant was graduate student Norman Wheeler and assisted in the field by under-graduate student Mrs. Noel Wheeler. He made the regional survey from highway 30 to the south border of Ohio and measured gravity at 724 stations including repetition of some of the first-order stations. During the winter period he computed gravity differences and the observed gravity values and free-air anomalies for all stations of Ohio so far measured. In September, 1954 Mr. Uotila connected gravimetrically the 18 airports

Figure 8. Making observation at a base station.

of the state using air transportation provided by the School of Aviation of The Ohio State University. The graduate student of the Institute, Mr. Dean Merchant, served as pilot and recorder during the measurements (Figure 8). In January 1955, Mr. Uotila measured the gravity difference between Cleveland Municipal Airport and Atlanta Municipal Airport, Georgia, and computed calibration factors for the gravimeter. He also tied those 18 airports to the first-order gravity stations and adjusted the base station net as well as the traverses of the first-order stations.

During the fiscal year 1955-56 the remaining part of the gravity survey was done and , in addition, several check measuring trips were carried out in the most interesting gravity anomaly areas. These measurements of 121 new stations were done by the research assistant, graduate student, Gottfried Konecny from Munich, Germany, assisted by the graduate student, Amadeo Dabul, from Argentina. Mr. Konecny computed free-air anomalies for these stations and the "simple" Bouguer anomalies for all gravity stations of the state of Ohio. He also compiled the free-air anomaly and Bouguer anomaly maps of the state of Ohio. When Mr. Konecny moved January 1, 1956 to the teaching assistant position in the Institute, Mr. Albert Endres from Bonn, Germany, became a research assistant. He computed the isostatic corrections to the gravity values and the isostatic anomalies for all gravity stations of the state of Ohio.

Significance of the Gravity Survey of the State of Ohio

The gravimeter of the Institute was first used during the spring of 1953 by the Institute's first graduate student, Captain William Kaula. He made local gravity surveys of about 170 points in the neighborhood of Columbus for his thesis concerning the deflection of the vertical at the astro-geodetic point in Columbus and at some other points near Columbus. It was known that in Columbus the east-west component of the deflection of

the vertical was about 10" , or much larger than the rather smooth topography led us to expect. Consequently, it was the general opinion that the astronomic longitude observations at Columbus were not reliable. However, the gravity observations and computations of Mr. Kaula resulted in the determination that the absolute deflection of the vertical in east-west direction in Columbus computed gravimetrically is not very far from the astro-geodetic deflection. The more detailed studies of Uotila and Konecny have proved this fact. Thus the very first measurements of our Institute discovered a geodetically important fact.

From a geological point of view this gravity survey is giving important additional information on the structure of the crust in Ohio and valuable information for exploration purposes. At the same time this survey has filled one of the gravimetrically unobserved areas with gravity values and is so helping world-wide gravimetric studies.

The anomaly maps show that the gravity field in Ohio is quite irregular. Large anomalies are frequent and maximum Bouguer anomaly is + 23 mgal and minimum -78 mgal.

The average Bouguer anomaly of whole Ohio, -38 mgal, shows that Ohio is in nearly complete isostatic equilibrium. The anomaly, -38 mgal, corresponds to the average elevation, 340 meters, which is close to the mean elevation of the state of Ohio.

The isostatic reduction of the gravity anomalies carried out by Mr. Endres confirms our opinion. He computed the gravity anomalies according to the Airy-Heiskanen system corresponding to the thickness of the earth's crust at 20, 30, 40, and 60 km. The average gravity anomaly corresponding to the value T = 30 km is -8 mgal.

When we planned the gravity survey of the state of Ohio we were convinced that this surveying would be interesting, not only from the geodetic and geophysical but also from the prospecting point of view. And in fact, it has given to the oil companies a new interest in the Fayette County area. Because of the unusual gravity field of this area, with gravity gradients exceeding along several profiles 4 mgal / mi., the maximum being 6.3 mgal/mi., the oil companies have leased an area of the order of 100,000 acres for prospecting purposes. We do not, of course, know yet what phenomena have caused these gravity gradients, but we are sure that the disturbing masses must be rather close to the earth's surface.

GRAVITY STATIONS IN THE STATE OF OHIO

Principal Facts For Gravity Stations

Base station: Cleveland Municipal Airport, g = 980.2319 gal, referred to Commerce building base, Washington, D. C., g = 980.1190 gal.

Theoretical gravity values: International gravity formula,

$$\gamma_o = 978.049\ (1 + 0.0052884 \sin^2\phi - 0.0000059 \sin^2 2\phi)$$

B = Bench mark

P = Pendulum station

No.	Latitude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T = 30 Km, in mgal
1	40° 00'.86	83° 01'.5	735.1	980.09877	980.18175	-13.8	-38.9	- 9.1
2	39 57.27	83 50.3	820	.07415	.17644	-25.2	-53.1	-23.1
3	39 57.57	82 41.0	1069.5 B*	.06613	.17688	-10.2	-46.6	-16.4
4	39 57.59	82 24.9	1013.5	.06271	.17691	-18.9	-53.4	-23.1
5	39 56.81	82 15.4	951.0 B	.07343	.17576	-12.9	-45.3	-15.2
6	39 56.39	82 00.5	727.5 B	.09945	.17514	- 7.3	-32.0	- 1.6
7	39 58.18	81 52.0	861	.09164	.17779	- 5.2	-34.5	- 3.7
8	39 59.48	81 44.1	847.0 B	.09065	.17971	- 9.4	-38.2	- 7.2
9	40 01.71	81 35.4	887.1 B	.08838	.18301	-11.2	-41.4	- 9.6
10	40 03.09	81 20.1	881.5 B	.08815	.18505	-14.0	-44.0	-10.8
11	40 03.45	81 09.2	955	.08124	.18559	-14.5	-47.1	-12.7
12	40 04.83	80 53.9	1284.4 B	.05933	.18761	- 7.5	-51.3	-15.4
13	40 04.00	80 43.3	672	.08566	.18640	-37.5	-60.4	-23.3
14	40 03.03	81 34.9	805	.09587	.18496	-13.4	-40.8	- 9.0
15	39 56.65	83 16.9	938	.11176	.17552	+24.5	- 7.5	+22.5
16	39 56.14	83 27.1	1047	.09395	.17477	+17.7	-18.0	+12.2
17	39 55.67	83 36.7	1201.5	.07729	.17407	+16.2	-24.7	+ 6.0
18	39 55.38	83 48.6	977.7 B	.07146	.17364	-10.2	-43.5	-13.2
19	39 54.52	84 02.3	857	.09102	.17237	- 0.7	-29.9	+ 0.1
20	39 53.44	84 11.9	995	.09283	.17077	+15.6	-18.3	+11.7
21	39 52.01	84 25.3	1048.0 B	.07566	.16865	+ 5.6	-30.1	0.0
22	39 50.87	84 37.7	1100.5	.05222	.16697	-11.2	-48.7	-18.8
23								
24	39 54.20	84 12.4	1000.5	.09417	.17190	+16.4	-17.7	+12.4
25	40 48.56	82 58.5	996.9 B	.14534	.25255	-13.4	-47.4	-17.4
26	40 49.65	83 16.9	860.5 B	.15101	.25417	-22.2	-51.5	-23.5
27	40 48.75	83 25.3	878.3 B	.14995	.25284	-20.3	-50.2	-22.4
28	40 49.60	83 39.2	946.5	.13004	.25409	-35.0	-67.3	-40.1
29	40 50.06	83 49.4	912	.12765	.25478	-41.4	-72.4	-45.4
30	40 49.98	83 58.4	866.5 B	.13715	.25466	-36.0	-65.5	-38.7
31	40 49.94	84 08.3	793.5	.15166	.25460	-28.3	-55.3	-28.6
32	40 50.81	84 21.5	773	.16371	.25590	-19.5	-45.8	-19.2
33	40 52.18	84 34.9	786.2 B	.17918	.25794	- 4.8	-31.6	- 5.2
34	40 51.09	84 42.4	805.9 B	.19524	.25631	+14.8	-12.7	+14.0
35	40 46.10	82 58.3	1006	.14348	.24889	-10.8	-45.1	-14.7
36	40 47.03	82 44.2	1160.7 B	.13811	.25027	- 2.9	-42.5	-11.0
37	40 45.74	82 39.5	1350	.12627	.24836	+ 4.9	-41.1	- 9.1
38	40 45.44	82 30.9	1238.6 B	.14009	.24793	+ 8.6	-33.6	- 1.2
39	40 46.37	82 15.9	1245.9 B	.15768	.24929	+25.6	-16.9	+15.0
40	40 48.44	82 05.9	1069	.17731	.25237	+25.5	-10.9	+20.7
41	40 48.62	81 56.1	1085.8 B	.17594	.25264	+25.6	-11.4	+20.6
42	40 47.94	81 41.8	1102.9 B	.17417	.25163	+26.3	-11.3	+21.3
43	40 47.81	81 31.3	949.4 B	.17765	.25143	+15.5	-16.9	+16.0
44	40 47.12	81 17.2	1147.5 B	.15460	.25042	+12.1	-27.0	+ 6.5
45	40 43.46	81 06.5	1052.1 B	.14619	.24496	+ 0.2	-35.7	- 1.5
46	40 44.18	80 53.0	1171.6 B	.12592	.24604	- 9.9	-49.8	-14.7
47	40 46.36	80 46.1	968.3 B	.13406	.24928	-24.1	-57.1	-21.9
48	40 47.44	80 32.9	848.0 B	.13773	.25090	-33.4	-62.3	-26.6
49	40 50.68	81 53.4	1151	.17376	.25570	+26.3	-12.9	+19.1
50	41 17.50	82 13.2	812	.21318	.25966	- 6.1	-33.8	- 7.8
51	41 15.37	82 29.5	900	.19661	.29247	-11.2	-41.9	-16.3
52	41 14.41	82 42.2	724	.20062	.29104	-22.3	-47.0	-21.6
53	41 16.48	82 50.4	751.3 B	.19688	.29414	-26.6	-52.2	-27.6
54	41 20.82	83 07.1	633.3 B	.22003	.30060	-20.7	-42.4	-18.7
55	41 27.36	83 18.6	615	.22205	.31036	-30.5	-51.4	-28.7
56	41 33.66	83 39.1	636	.24277	.31977	-17.2	-38.8	-15.9
57	41 35.09	83 50.0	682	.22803	.32189	-29.7	-53.0	-29.4
58	41 34.41	84 00.3	724.2 B	.21895	.32088	-33.8	-58.5	-34.4
59	41 34.39	84 08.9	790	.22357	.32085	-23.0	-49.9	-25.3
60	41 34.32	84 19.5	716.5 B	.24760	.32075	- 5.8	-30.2	- 5.0
61	41 35.18	84 34.5	894.1 B	.24179	.32203	+ 3.8	-26.6	- 0.2
62	41 35.09	84 44.9	901.9 B	.23717	.32189	+ 0.1	-30.6	- 3.4
63	41 37.70	85 00.6	1043	.24762	.32580	+19.9	-15.6	+12.4
64	41 33.58	83 28.9	628	.24060	.31965	-20.0	-41.4	-19.0
65	41 23.29	82 01.4	731.5	.23008	.30429	- 5.4	-30.3	- 4.7

No.	Latitude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T = 30 km, in mgal
66	41° 22'.34	81° 52'.3	787	980.22905	980.30287	+ 0.2	-26.6	- 0.1
67	41 23.05	81 38.6	863	.22056	.30393	- 1.5	-30.9	- 3.7
68	41 27.79	81 20.5	1094.0 B	.21731	.31100	+ 9.2	-28.1	+ 0.2
69	41 25.94	81 20.0	1207.5	.20791	.30824	+13.2	-27.9	+ 0.9
70	41 31.90	81 08.7	1324	.20468	.31713	+12.1	-33.0	- 4.1
71	41 32.09	81 03.1	1252	.21014	.31742	+10.5	-32.2	- 4.0
72	41 32.09	80 52.0	901.7 B	.23491	.31742	+ 2.3	-28.4	+ 1.7
73	41 32.06	80 38.8	1003	.22468	.31738	+ 1.6	-32.5	- 1.7
74	41 32.82	80 34.2	1139	.21558	.31851	+ 4.2	-34.6	- 3.7
75	39 20.02	82 58.9	639.8 B	.03121	.12142	-30.0	-51.8	-23.6
76	39 16.02	82 47.4	685.5 B	.03055	.11553	-20.5	-43.9	-15.9
77	39 16.05	82 35.0	704	.03266	.11557	-16.7	-40.7	-12.4
78	39 14.79	82 27.7	767.0 B	.02716	.11371	-14.4	-40.5	-12.2
79	39 13.64	82 12.2	773.9 B	.01528	.11202	-24.0	-50.3	-21.8
80	39 19.86	82 06.2	722.5 B	.03204	.12119	-21.2	-45.8	-17.2
81	39 24.02	81 57.4	632.4 B	.04175	.12732	-26.1	-47.6	-18.2
82	39 23.93	81 39.9	760.5	.02442	.12718	-31.2	-57.2	-26.6
83	39 24.92	81 27.3	616.5 B	.03551	.12865	-35.2	-56.2	-24.2
84	39 23.47	81 12.4	624.1 B	.03774	.12650	-30.0	-51.3	-17.2
85	39 13.27	83 17.7	738.7 B	.04471	.11148	+ 2.7	-22.4	+ 6.6
86	39 13.22	83 25.3	959	.03956	.11140	+18.4	-14.3	+15.0
87	39 12.15	83 36.7	1132.4 B	.02328	.10983	+20.0	-18.6	+10.4
88	39 11.02	83 56.0	934.2 B	980.00562	.10816	-14.7	-46.5	-18.1
89	39 08.02	84 04.9	905.5 B	979.99282	.10375	-25.8	-56.6	-28.8
90	39 07.96	84 13.5	531.2 B	980.01232	.10366	-41.3	-59.4	-32.5
91	39 08.30	84 25.3	805 P	.00001	.10416	-28.4	-55.9	-29.9
92	39 06.14	84 30.7	549.2 B	.01385	.10098	-35.4	-54.1	-28.7
93	39 09.91	84 43.2	498.3 B	.03049	.10653	-29.2	-46.1	-21.0
94	38 44.06	82 59.7	534.4 B	.01662	.06854	- 1.5	-19.8	+ 8.2
95	38 45.49	82 53.7	539.2 B	980.00871	.07064	-11.1	-29.5	- 1.6
96	38 32.24	82 41.2	542.8 B	979.99163	.05120	- 8.1	-26.6	+ 2.9
97	38 25.40	82 26.3	549.7 B	979.96966	.04119	-20.0	-38.8	- 8.5
98	38 42.91	83 03.1	535	980.01565	.06684	- 0.9	-19.1	+ 9.0
99	38 36.41	83 17.0	525	979.99805	.05732	- 9.9	-27.8	+ 0.3
100	38 44.78	83 31.1	595.8 B	.99995	.06959	-13.6	-33.9	- 6.7
101	38 38.69	83 45.6	521.1 B	.99880	.06066	-12.8	-30.6	- 5.4
102	38 47.40	83 57.8	507.4 B	.99214	.07344	-33.6	-50.9	-30.0
103	38 50.43	84 05.8	921.0 B	979.97089	.07788	-20.4	-51.7	-25.9
104	38 57.07	84 16.9	497.8 B	980.00344	.08763	-37.4	-54.3	-28.6
105	39 06.21	84 25.8	481.5	.01575	.10108	-40.0	-56.4	-30.6
106	41 32.50	84 46.1	891	.23723	.31804	+ 3.0	-27.4	- 0.3
107	41 29.83	84 46.1	867.5	.24090	.31405	+ 8.4	-21.1	+ 5.9
108	41 27.46	84 45.0	840	.24152	.31051	+10.0	-18.6	+ 8.2
109	41 23.79	84 44.9	845	.23682	.30504	+11.3	-17.5	+ 9.3
110	41 21.20	84 44.9	816.5	.23448	.30117	+10.1	-17.7	+ 8.7
111	41 18.19	84 44.9	763	.23441	.29668	+ 9.5	-16.5	+15.8
112	41 15.15	84 45.5	738.5 B	.23240	.29214	+ 9.7	-15.4	+10.8
113	41 12.48	84 44.9	738	.22866	.28817	+ 9.9	-15.2	+10.9
114	41 09.90	84 44.0	736.4 B	.22407	.28432	+ 9.0	-16.1	+10.0
115	41 07.45	84 43.6	742.5 B	.22050	.28067	+ 9.7	-15.6	+10.5
116	41 04.66	84 43.9	750.5 B	.21736	.27651	+11.4	-14.1	+12.1
117	41 02.00	84 43.9	757	.21218	.27255	+10.8	-15.0	+11.2
118	40 59.35	84 42.4	759	.20678	.26860	+ 9.6	-16.3	+10.0
119	40 55.88	84 42.4	779.0 B	.20078	.26344	+10.6	-15.9	+10.5
120	40 53.25	84 42.4	788.5 B	.19703	.25952	+11.7	-15.2	+11.4
121	40 55.01	84 34.3	761	.18457	.26214	- 6.0	-31.9	- 5.6
122	40 57.63	84 34.3	750.5	.19284	.26605	- 2.6	-28.2	- 2.1
123	40 59.38	84 34.3	740.9 B	.19865	.26865	- 0.3	-25.6	+ 0.4
124	41 02.03	84 34.4	731	.20624	.27259	+ 2.4	-22.5	+ 3.3
125	41 04.66	84 34.4	727.5	.21352	.27651	+ 5.4	-19.4	+ 6.3
126	41 08.29	84 34.8	722	.22098	.28192	+ 7.0	-17.6	+ 8.0
127	41 10.76	84 35.0	726	.22118	.28560	+ 3.9	-20.9	+ 4.6
128	41 13.88	84 34.9	715	.22267	.29025	- 0.3	-24.7	+ 0.8
129	41 17.37	84 33.2	708.8 B	.22612	.29546	- 2.7	-26.8	- 1.3
130	41 20.37	84 33.3	716.5	.22856	.29993	- 4.0	-28.4	- 2.8

No.	Latitude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T = 30Km, in mgal
131	41° 22'.97	84° 33'.3	724	980.23388	980.30381	- 1.8	-26.5	- 0.8
132	41 25.60	84 33.0	727	.23698	.30774	- 2.4	-27.2	- 1.4
133	41 28.39	84 33.1	772.5 B	.23804	.31190	- 1.2	-27.5	- 1.6
134	41 29.98	84 33.3	798.5	.23951	.31427	+ 0.4	-26.9	- 0.9
135	41 32.58	84 33.3	825	.24269	.31816	+ 2.1	-26.0	+ 0.1
136	41 37.76	84 33.2	871	.24282	.32588	- 1.1	-30.8	- 4.3
137	41 39.93	84 33.2	878	.24349	.32912	- 3.0	-33.0	- 6.4
138	41 42.52	84 33.2	902.2	.24231	.33300	- 5.8	-36.6	- 9.7
139	41 41.59	84 44.8	980.3 B	.23778	.33160	- 1.6	-35.0	- 7.4
140	41 38.10	84 45.9	991	.23432	.32639	+ 1.1	-32.7	- 5.2
141	41 36.54	84 45.3	942	.23529	.32407	- 0.2	-32.3	- 5.0
142	41 31.71	84 18.1	733	.23880	.31685	- 9.1	-34.1	- 9.1
143	41 29.12	84 18.3	723.5	.22912	.31299	-15.1	-39.8	-14.9
144	41 26.52	84 18.3	735	.21870	.30911	-21.3	-46.3	-21.5
145	41 25.85	84 21.6	710.5	.22310	.30811	-18.2	-42.4	-17.5
146	41 23.05	84 21.6	720.5 B	.21542	.30393	-20.7	-45.3	-20.5
147	41 20.43	84 21.6	717	.20922	.30002	-23.4	-47.8	-23.0
148	41 17.20	84 21.6	689.5 B	.20660	.29521	-23.8	-47.2	-22.4
149	41 14.28	84 21.7	699.5	.20839	.29085	-16.7	-40.5	-15.7
150	41 11.66	84 21.7	719.5	.20557	.28694	-13.7	-38.2	-13.3
151	41 10.79	84 22.8	719	.20679	.28565	-11.2	-35.7	-10.8
152	41 08.16	84 22.8	718.5	.20696	.28173	- 7.2	-31.7	- 6.7
153	41 07.15	84 22.8	717.5	.20568	.28022	- 7.0	-31.5	- 6.5
154	41 03.81	84 22.8	721.5	.19656	.27525	-10.8	-35.4	-10.2
155	41 02.09	84 21.7	723	.18820	.27268	-16.5	-41.1	-15.8
156	40 59.47	84 21.7	726	.17892	.26878	-21.6	-46.3	-20.7
157	40 56.82	84 21.7	736.5	.17326	.26484	-22.3	-47.4	-21.5
158	40 55.06	84 20.5	750	.16854	.26222	-23.1	-48.7	-22.7
159	40 53.31	84 21.0	759	.16626	.25961	-22.0	-47.8	-21.6
160	40 52.07	84 08.5	784	.15356	.25777	-30.5	-57.2	-30.8
161	40 54.27	84 09.4	754.5	.15647	.26104	-33.6	-59.3	-33.1
162	40 56.88	84 09.8	740	.15803	.26493	-37.3	-62.5	-36.6
163	40 58.99	84 12.1	731.5 B	.16692	.26806	-32.3	-57.3	-31.6
164	41 02.13	84 11.9	727	.17317	.27274	-31.2	-56.0	-30.7
165	41 05.60	84 12.5	724	.18112	.27791	-28.7	-53.4	-28.5
166	41 08.22	84 12.5	717.5	.18433	.28182	-30.0	-54.4	-29.6
167	41 10.84	84 11.4	743.5	.18459	.28572	-31.2	-56.5	-31.8
168	41 13.35	84 10.1	725	.18514	.28946	-36.1	-60.8	-36.2
169	41 15.20	84 07.9	707.5	.18508	.29222	-40.6	-64.7	-40.2
170	41 17.79	84 07.0	698	.19000	.29609	-40.4	-64.2	-39.8
171	41 20.44	84 07.1	689	.19645	.30004	-38.8	-62.3	-38.0
172	41 22.18	84 07.2	687.5	.19989	.30263	-38.1	-61.5	-37.2
173	41 24.80	84 07.8	685	.20519	.30654	-36.9	-60.3	-36.0
174	41 37.39	84 08.0	699.5	.20944	.31040	-35.2	-59.0	-34.6
175	41 30.02	84 08.0	721.5	.21400	.31433	-32.5	-57.0	-32.7
176	41 32.65	84 08.0	755	.21896	.31826	-28.3	-54.0	-29.5
177	41 36.10	84 08.8	786	.22905	.32341	-20.4	-47.2	-22.5
178	41 38.32	84 09.0	804	.23685	.32672	-14.2	-41.6	-16.8
179	41 40.05	84 11.2	750	.25481	.32930	- 3.9	-29.5	- 4.5
180	41 42.91	84 11.5	767	.25751	.33358	- 3.9	-30.1	- 4.9
181	41 42.57	84 19.7	837.5	.25161	.33307	- 2.7	-31.2	- 5.2
183	41 37.29	84 19.5	734	.25423	.32518	- 1.9	-26.9	- 1.4
184	41 31.79	84 00.2	690.5	.21619	.31697	-35.8	-59.4	-35.4
185	41 29.18	84 00.5	689.5 B	.21296	.31308	-35.3	-58.8	-34.8
186	41 26.59	84 00.5	683.4 B	.20936	.30921	-35.1	-58.5	-34.5
187	41 24.66	84 00.5	667	.20695	.30633	-36.6	-59.4	-35.4
188	41 23.99	83 56.5	673.5	.20229	.30534	-39.7	-62.6	-38.8
189	41 21.39	83 56.5	680.5	.19415	.30145	-43.3	-66.5	-42.6
190	41 18.74	83 56.4	688	.18621	.29750	-46.6	-70.0	-46.0
191	41 16.17	83 56.4	699	.17980	.29367	-48.1	-71.9	-47.8
192	41 13.50	83 56.4	710.5	.17316	.28969	-49.7	-73.9	-49.5
193	41 10.90	83 56.3	719.5	.16650	.28581	-51.6	-76.2	-51.5
194	41 08.30	83 56.3	737.5	.16099	.28194	-51.6	-76.7	-51.9
195	41 05.67	83 56.3	750.5	.15586	.27802	-51.6	-77.1	-52.1

No.	Latitude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T = 30 Km, in mgal
196	41° 03.'04	83° 57.'4	784	980.15395	980.27410	-46.4	-73.1	-47.8
197	41 00.47	83 57.4	743.5	.15575	.27027	-44.6	-69.9	-44.3
198	40 57.83	83 57.4	766	.15149	.26635	-42.8	-68.9	-43.0
199	40 55.21	83 57.4	787	.14703	.26244	-41.4	-68.2	-42.0
200	40 52.61	83 58.5	823	.14262	.25858	-38.6	-66.6	-40.1
201	40 52.67	83 49.4	863.5	.13170	.25867	-45.8	-75.2	-48.5
202	40 55.39	83 49.4	832	.13508	.26271	-49.4	-77.7	-51.3
203	40 57.93	83 49.4	806	.14122	.26649	-49.5	-76.9	-50.9
204	41 00.34	83 47.8	778.2 B	.15163	.27008	-45.2	-71.8	-45.9
205	41 03.08	83 47.4	786	.15567	.27416	-44.6	-71.3	-45.8
206	41 05.69	88 47.4	778	.15880	.27805	-46.1	-72.6	-47.5
207	41 07.85	83 47.1	739.5	.16549	.28127	-46.2	-71.4	-46.5
208	41 10.93	83 47.1	714	.17185	.28586	-46.8	-71.2	-46.6
209	41 13.56	83 47.1	698	.17978	.28977	-44.3	-68.1	-43.8
210	41 16.19	83 47.2	695.5	.18800	.29370	-40.3	-64.0	-40.0
211	41 18.80	83 47.2	687	.19699	.29759	-36.0	-59.4	-35.5
212	41 21.45	83 47.2	683.5	.20375	.30154	-33.5	-56.8	-33.1
213	41 24.07	83 47.2	672.5	.21052	.30545	-31.7	-54.6	-31.0
214	41 25.81	83 47.2	665.5	.21615	.30805	-29.3	-52.0	-28.5
215	41 27.96	83 49.5	664	.21913	.31125	-29.7	-52.3	-28.7
216	41 30.96	83 49.6	664	.22425	.31573	-29.0	-51.6	-28.1
217	41 32.95	83 49.5	673.5	.22646	.31871	-28.9	-51.8	-28.3
218	41 37.74	83 50.2	679	.23327	.32585	-28.7	-51.8	-28.1
219	41 40.34	83 50.3	697	.23620	.32974	-28.0	-51.7	-27.9
220	41 43.58	83 50.4	711.5	.24130	.33458	-26.4	-50.6	-26.6
221	41 42.82	84 01.7	752.5	.23326	.33345	-29.4	-55.0	-30.4
222	41 40.18	84 02.1	761	.22838	.32950	-29.5	-55.5	-30.9
223	41 37.57	84 02.1	756	.22443	.32560	-30.1	-55.8	-31.4
224	41 31.26	83 38.2	639.5	.23927	.31618	-16.8	-38.6	-15.7
225	41 28.68	83 38.8	652.5	.23590	.31233	-15.0	-37.3	-14.2
226	41 25.75	83 39.1	663.5	.23135	.30796	-14.2	-36.8	-13.5
227	41 22.57	83 38.7	695.5 B	.22216	.30321	-15.6	-39.3	-15.7
228	41 19.63	83 39.0	686	.21351	.29883	-20.8	-44.2	-20.4
229	41 16.98	83 39.0	686	.20465	.29488	-25.7	-49.1	-25.1
230	41 14.43	83 39.0	695	.19351	.29107	-32.2	-55.9	-31.7
231	41 11.40	83 39.0	714	.18457	.28656	-34.8	-59.2	-34.5
232	41 08.34	83 39.0	770	.17604	.28200	-33.5	-59.8	-34.8
233	41 05.25	83 39.0	821.0 B	.16594	.27739	-34.2	-62.2	-36.9
234	41 02.32	83 39.0	780.2 B	.16229	.27303	-37.4	-64.0	-38.3
235	40 58.73	83 39.0	801	.15525	.26768	-37.1	-64.4	-38.3
236	40 57.00	83 39.0	831	.14821	.26511	-38.7	-67.0	-40.7
237	40 54.39	83 39.0	854.5	.14064	.26122	-40.2	-69.3	-42.6
238	40 51.75	83 39.0	896	.13598	.25730	-37.0	-67.6	-40.6
239	40 50.83	83 22.9	843.5	.15527	.25593	-21.3	-50.1	-22.3
240	40 53.42	83 22.9	828.5	.16035	.25977	-21.5	-49.7	-22.6
241	40 56.04	83 23.0	822.5	.16362	.26368	-22.7	-50.7	-23.8
242	40 58.70	83 23.0	848	.16226	.26763	-25.6	-54.5	-27.8
243	41 01.72	83 24.1	842	.16828	.27213	-24.6	-53.3	-27.2
244	41 04.93	83 24.1	811	.17508	.27692	-25.6	-53.2	-27.4
245	41 07.38	83 24.1	785	.18119	.28057	-21.0	-47.8	-22.4
246				.18530				
247	41 13.07	83 25.2	733	.19587	.28904	-24.2	-49.2	-24.5
248	41 16.15	83 25.2	719.5	.20393	.29364	-22.0	-46.6	-22.4
249	41 18.73	83 25.1	703.5 B	.20745	.29749	-23.9	-47.8	-23.9
250	41 21.33	83 25.0	669	.21308	.30136	-25.4	-48.2	-24.5
251	41 23.95	83 25.0	657	.21806	.30528	-25.4	-47.8	-24.5
252	41 26.51	83 24.9	651	.22150	.30909	-26.4	-48.5	-25.5
253	41 29.14	83 24.9	637	.22755	.31302	-25.6	-47.3	-24.6
254	41 31.81	83 24.9	625	.23364	.31700	-24.6	-45.9	-23.5
255	41 34.43	83 24.9	606	.23777	.32091	-26.1	-46.8	-24.7
256	41 36.98	83 25.0	606	.24290	.32472	-24.8	-45.5	-23.5
257	41 40.46	83 25.8	587.7 B	.24855	.32992	-26.1	-46.1	-24.1
258	41 42.90	83 41.6	647.0 B	.24750	.33356	-25.2	-47.2	-24.1
259	41 40.18	83 40.1	634.0 B	.24779	.32950	-22.1	-43.7	-20.7
260	41 36.10	83 39.9	629.0 B	.24545	.32341	-18.8	-40.2	-17.3

No.	Latitude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T = 30 Km, in mgal
261	41° 22.63	83° 13.4	673	980.21326	980.30330	-26.7	-49.7	-26.2
262	41 20.48	83 13.5	667.0 B	.22373	.30010	-13.6	-36.4	-12.6
263	41 17.33	83 14.1	688.5	.23491	.29540	+ 4.3	-19.2	+ 4.9
264	41 14.83	83 12.4	694	.24115	.29167	+14.8	- 8.9	+15.6
265	41 12.63	83 10.1	699.5	.23021	.28839	+ 7.6	-16.2	+ 8.6
266	41 10.06	83 10.1	728	.21733	.28456	+ 1.2	-23.6	+ 1.6
267	41 06.87	83 10.5	758.2 B	.19876	.27981	- 9.7	-35.6	- 9.7
268	41 03.98	83 10.4	786	.17737	.27550	-24.2	-51.0	-24.7
269	41 00.88	83 10.2	832.5	.16660	.27088	-26.0	-54.3	-27.5
270	40 57.51	83 10.1	809	.16259	.26587	-27.2	-54.8	-27.5
271	40 55.63	83 12.0	838	.15642	.26307	-27.8	-56.4	-28.9
272	40 53.14	83 14.5	825	.15496	.25936	-26.8	-54.9	-27.2
273	40 50.86	82 59.5	996.5	.14691	.25597	-15.3	-49.3	-19.9
274	40 53.51	83 00.9	967	.15009	.25991	-18.9	-51.8	-23.1
275	40 56.14	83 01.0	978	.15229	.26383	-19.6	-52.9	-24.8
276	40 58.76	83 01.0	960.5	.15650	.26772	-20.9	-53.6	-26.0
277	41 01.34	83 00.9	925	.16265	.27157	-21.9	-53.4	-26.0
278	41 03.98	83 00.9	886	.16726	.27550	-24.9	-55.1	-28.2
279	41 06.58	83 00.9	886	.17174	.27937	-24.3	-54.5	-28.2
280	41 09.21	83 00.9	841.5	.17987	.28329	-24.3	-53.0	-27.2
281	41 12.75	83 00.9	790	.19422	.28857	-20.0	-47.0	-22.0
282	41 14.52	83 03.3	704	.20644	.29121	-18.6	-42.5	-17.9
283	41 17.28	83 03.1	661	.20765	.29533	-25.5	-47.7	-23.5
284	41 19.80	83 03.1	632	.21309	.29908	-26.5	-48.1	-24.2
285	41 23.91	83 06.4	598	.21894	.30522	-30.0	-50.4	-27.2
286	41 26.59	83 03.7	578.5	.21852	.30921	-36.3	-56.0	-33.2
287	41 29.27	83 00.1	580.5	.22418	.31321	-34.4	-54.2	-31.9
288	41 30.84	82 56.4	578.0 B	.22696	.31555	-34.2	-53.9	-31.9
290	41 06.90	83 10.0	764 P	.19797	.27985	-10.0	-36.0	-10.3
291	41 25.23	83 13.3	621	.21589	.30718	-32.9	-54.0	-31.0
292	41 27.94	83 13.3	601	.22051	.31122	-34.2	-54.7	-32.1
293	41 30.97	83 13.3	600	.22506	.31575	-34.2	-54.7	-32.5
294	41 34.49	83 13.3	585	.23570	.32100	-30.5	-50.3	-28.5
295	41 36.21	83 15.7	581	.23734	.32357	-31.6	-51.4	-29.7
296	41 39.22	83 16.5	576	.24201	.32806	-31.9	-51.5	-30.0
297	41 14.41	82 50.3	788	.19221	.29104	-24.7	-51.6	-26.7
298	41 11.38	82 50.3	829	.18632	.28653	-22.2	-50.5	-24.7
299	41 09.63	82 50.6	840.5	.18304	.28392	-21.8	-50.5	-24.4
300	41 07.43	82 50.5	892.5	.17701	.28064	-19.7	-50.1	-23.3
301	41 06.52	82 47.1	858.5 B	.18002	.27928	-18.5	-47.8	-20.7
302	41 04.13	82 43.0	912.5	.17491	.27572	-15.0	-46.1	-18.2
303	41 01.93	82 43.9	948.5	.16959	.27245	-13.6	-46.0	-17.6
304	40 58.91	82 44.6	957.0	.16456	.26794	-13.4	-46.0	-17.0
305	40 56.69	82 44.6	1000	.15894	.26465	-11.6	-45.7	-15.9
306	40 53.93	82 44.6	1124	.14868	.26053	- 6.1	-44.4	-13.9
307	40 50.99	82 45.8	1131	.14315	.25616	- 6.6	-45.2	-14.2
308	40 49.27	82 45.8	1125	.14061	.25360	- 7.2	-45.5	-14.3
309	40 48.13	82 39.3	1204	.13843	.25191	- 0.2	-41.3	- 9.4
310	40 50.55	82 38.6	1138	.14679	.25551	- 1.7	-40.5	- 9.0
311	40 53.78	82 39.7	1088.5	.15403	.26031	- 3.9	-41.0	-10.0
312	40 56.69	82 40.0	1091	.15579	.26465	- 6.2	-43.4	-13.2
313	40 58.23	82 40.0	1022.5	.16265	.26693	- 8.1	-42.9	-13.1
314	41 00.33	82 40.2	971	.16846	.27006	-10.3	-43.4	-14.4
315	41 04.10	82 40.0	918.5	.17611	.27568	-13.2	-44.5	-16.2
316	41 06.26	82 39.6	892	.18162	.27890	-13.4	-43.8	-16.2
317	41 08.44	82 39.3	846	.18540	.28215	-17.2	-46.0	-18.9
318	41 11.51	82 38.2	781	.19318	.28672	-20.1	-46.7	-20.4
319	41 15.56	82 36.7	691	.20626	.29275	-21.5	-45.0	-19.6
320	41 17.38	82 36.5	601	.21664	.29548	-22.3	-42.8	-17.8
321	41 20.08	82 35.2	635	.21672	.29950	-23.0	-44.7	-20.3
322	41 23.93	82 33.0	577.3 B	.22711	.30525	-23.8	-43.6	-19.7
323	41 35.32	82 50.2	577	.23086	.32224	-37.1	-56.8	-35.3
324	41 33.39	82 50.2	592	.22889	.31936	-34.8	-55.0	-33.2
325	41 31.36	82 51.6	582	.22781	.31633	-33.8	-53.6	-31.6

No.	Latitude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T= 30 Km, in mgal
326	41° 28'.09	82° 49'.1	580	980.22303	980.31145	-33.9	-53.6	-30.9
327	41 25.53	82 49.2	608	.21848	.30763	-32.0	-52.7	-29.7
328	41 23.60	82 48.4	655	.21386	.30476	-29.3	-51.6	-28.2
329	41 21.01	82 49.8	705	.20644	.30088	-28.1	-52.2	-28.3
330	41 19.61	82 49.8	713	.20423	.29880	-27.5	-51.8	-27.8
331	41 14.86	82 23.9	861	.20120	.29171	- 9.5	-38.9	-12.9
332	41 12.02	82 21.7	898.5	.19394	.28748	- 9.0	-39.6	-12.7
333	41 09.01	82 21.7	934	.18852	.28299	- 6.6	-38.4	-10.7
334	41 06.93	82 21.6	950	.18580	.27990	- 4.7	-37.1	- 9.0
335	41 05.27	82 26.3	984	.18079	.27742	- 4.1	-37.6	- 9.0
336	41 03.70	82 29.2	992	.17674	.27508	- 5.0	-38.8	- 9.8
337	41 00.62	82 29.1	1130	.16537	.27049	+ 1.2	-37.3	- 7.5
338	40 58.54	82 29.5	1161.5	.16070	.26739	+ 2.8	-36.8	- 6.6
339	40 55.87	82 29.8	1197.5	.15531	.26342	+ 4.5	-36.3	- 5.5
340	40 53.69	82 30.3	1065	.16052	.26018	+ 0.5	-35.8	- 4.5
341	40 50.88	82 32.4	1229	.15319	.25600	+12.8	-29.1	+ 2.8
342	40 48.36	82 32.4	1229	.14258	.25226	+ 5.9	-36.0	- 3.8
343	40 48.33	82 16.3	1169.5	.16534	.25221	+23.1	-16.7	+15.0
344	40 50.80	82 17.9	1120.5	.16950	.25588	+19.0	-19.2	+12.3
345	40 54.05	82 19.0	996.5	.17896	.26071	+12.0	-22.0	+ 9.0
346	40 56.72	82 16.0	1050	.18087	.26469	+14.9	-20.8	+ 9.7
347	40 59.53	82 13.4	1214	.17632	.26887	+21.6	-19.7	+10.3
348	41 02.56	82 13.3	1105	.18507	.27338	+15.6	-22.0	+ 7.6
349	41 05.08	82 13.3	1015	.19232	.27714	+10.6	-23.9	+ 5.2
350	41 07.72	82 13.2	903	.19994	.28107	+ 3.8	-27.0	+ 1.5
351	41 09.47	82 13.1	866.5	.20287	.28368	+ 0.7	-28.8	- 0.8
352	41 12.01	82 13.0	814.5	.20635	.28746	- 4.5	-32.3	- 4.9
353	41 14.22	82 13.3	812.5	.20809	.29076	- 6.2	-33.9	- 6.9
354	41 20.40	82 13.0	790	.21827	.29998	- 7.4	-34.3	- 9.0
355	41 23.32	82 12.6	730	.22648	.30434	- 9.2	-34.1	- 9.4
356	41 25.59	82 12.3	619	.23647	.30772	-13.0	-34.1	- 9.8
357	41 27.54	82 12.2	599	.24031	.31063	-14.0	-34.4	-10.4
358	41 25.71	82 21.9	578	.23510	.30790	-18.4	-38.1	-14.2
359	41 22.13	82 21.8	764	.21765	.30255	-13.0	-39.1	-14.5
360	41 19.82	82 21.7	776	.21298	.29911	-13.1	-39.6	-14.6
361	41 16.60	82 23.4	853	.20417	.29431	- 9.9	-39.0	-13.4
362	41 21.16	82 01.2	775.5	.22446	.30111	- 3.7	-30.1	- 4.1
363	41 18.85	82 01.3	791.5	.22066	.29767	- 2.6	-29.5	- 2.9
364	41 15.62	82 01.4	823	.21640	.29284	+ 1.0	-27.1	+ 0.1
365	41 13.34	82 01.4	888	.21142	.28945	+ 5.5	-24.8	+ 2.9
366	41 11.09	82 01.4	969.5	.20562	.28609	+10.7	-22.3	+ 5.8
367	41 08.18	82 01.5	1064	.19779	.28176	+16.1	-20.2	+ 8.8
368	41 05.43	82 01.5	1041	.19675	.27766	+17.0	-18.5	+11.1
369	41 03.21	82 01.3	989	.19850	.27435	+17.2	-16.5	+13.3
370	41 00.03	82 04.1	1044.5	.19209	.26961	+20.7	-14.9	+18.2
371	40 57.07	82 06.6	1065	.18848	.26521	+23.4	-12.8	+17.7
372	40 54.92	82 06.5	1058.5	.18763	.26201	+25.2	-10.9	+20.0
373	40 52.30	82 06.5	1158.5	.17838	.25812	+29.2	-10.2	+21.0
374	40 49.71	82 06.0	1109	.17767	.25426	+27.7	-10.1	+21.3
375	40 50.47	81 55.7	1040	.18175	.25537	+24.2	-11.3	+20.6
376	40 52.78	81 55.2	1165	.17783	.25883	+28.6	-11.1	+20.6
377	40 55.83	81 54.4	1095	.18472	.26337	+24.4	-13.0	+18.2
378	40 57.61	81 54.0	1037	.19011	.26602	+21.6	-13.7	+17.4
379	40 59.70	81 53.4	989.5	.19416	.26912	+18.1	-15.6	+15.3
380	41 01.51	81 51.9	1025.5	.19303	.27182	+17.7	-17.3	+13.4
381	41 04.63	81 51.9	1218	.18303	.27647	+21.1	-20.4	+10.7
382	41 07.87	81 51.9	1085	.19326	.28130	+14.0	-23.0	+ 6.6
383	41 10.25	81 51.7	932	.20465	.28484	+ 7.5	-24.3	+ 5.6
384	41 12.97	81 50.5	1149.5	.19324	.28890	+12.5	-26.7	+ 2.2
385	41 15.68	81 50.4	1148	.19565	.29293	+10.7	-28.4	- 0.4
386	41 18.77	81 51.5	893.5	.21776	.29755	+ 4.2	-26.2	+ 1.0
387	41 20.67	81 51.5	820.5	.22571	.30038	+ 2.5	-25.4	+ 1.4
388	41 24.25	81 50.5	775	.23105	.30572	- 1.8	-28.2	- 2.0
389	41 26.99	81 49.0	758.5	.23789	.30981	- 0.6	-26.4	- 0.7
390	41 28.78	81 50.5	674.5	.24458	.31248	- 4.5	-27.4	- 2.1

No.	Latidude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T = 30 Km, in mgal
391	41° 30.'76	82° 01.'2	592	980.25060	980.31543	- 9.2	-29.3	- 5.1
392	41 27.52	82 01.2	691	.24032	.31060	- 5.3	-28.8	- 4.1
393	41. 25.10	82 02.5	709	.23389	.30699	- 6.4	-30.6	- 5.6
394	41 20.64	81 38.0	860	.21461	.30033	- 4.8	-34.1	- 6.1
395	41 17.79	81 37.6	1086	.19778	.29609	+ 3.8	-33.2	- 4.3
396	41 15.76	81 37.7	1112	.19464	.29305	+ 6.2	-31.7	- 2.5
397	41 13.46	81 38.3	1225	.18554	.28963	+11.1	-30.6	- 0.7
398	41 10.52	81 38.2	999	.19541	.28525	+ 4.1	-29.9	+ 0.7
399	41 08.16	81 38.2	1023.5	.19500	.28173	+ 9.5	-25.3	+ 5.7
400	41 04.52	81 38.3	1003.5	.19447	.27630	+12.6	-21.6	+10.3
401	41 01.55	81 38.3	1043.5	.19121	.27188	+17.5	-18.1	+13.3
402	40 59.28	81 40.2	1183.5	.18168	.26850	+24.5	-15.8	+16.4
403	40 57.32	81 44.3	960	.19226	.26559	+17.0	-15.7	+16.4
404	40 55.00	81 44.2	994	.19081	.26213	+22.2	-11.7	+20.5
405	40 52.41	81 43.2	1063	.18363	.25828	+25.3	-10.9	+20.7
406	40 50.18	81 42.1	1083	.17904	.25496	+26.0	-11.0	+21.5
407	40 50.27	81 30.1	1076.5	.17328	.25509	+19.4	-17.2	+15.7
408	40 52.75	81 28.8	1155	.17066	.25879	+20.5	-18.8	+14.0
409	40 55.27	81 27.8	1186	.17274	.26253	+21.8	-18.6	+14.2
410	40 58.44	81 27.9	1200	.17368	.26724	+19.3	-21.6	+11.0
411	41 00.91	81 27.8	1122.5	.18090	.27093	+15.6	-22.7	+ 9.8
412	41 04.36	81 26.6	1087	.18576	.27607	+11.9	-25.1	+ 7.1
413	41 07.08	81 26.5	1160	.18438	.28012	+13.4	-26.2	+ 5.9
414	41 09.53	81 26.4	1092	.19110	.28377	+10.0	-27.2	+ 4.7
415	41 12.15	81 26.4	1074	.19399	.28767	+ 7.3	-29.3	+ 1.9
416	41 15.10	81 26.4	1087	.19538	.29207	+ 5.6	-31.5	- 0.7
417	41 17.86	81 26.4	1103.5	.19686	.29619	+ 4.5	-33.1	- 3.1
418	41 20.11	81 26.5	1092	.20018	.29954	+ 3.4	-33.8	- 4.5
419	41 22.26	81 26.3	1028.5	.20732	.30275	+ 1.3	-33.7	- 4.8
420	41 24.63	81 26.5	1178	.20121	.30629	+ 5.7	-34.4	- 6.3
421	41 27.21	81 26.6	1078.5	.21133	.31013	+ 2.6	-34.1	- 6.5
422	41 29.49	81 26.3	1127	.21485	.31354	+ 7.3	-31.1	- 4.0
423	41 32.36	81 26.4	962.5	.23318	.31783	+ 5.9	-26.9	- 0.1
424	41 35.26	81 26.5	847	.24409	.32215	+ 1.6	-27.2	- 0.9
425	41 37.64	81 25.9	682	.25943	.32571	- 2.1	-25.4	+ 0.6
426	41 38.61	81 28.2	620	.26184	.32715	- 7.0	-28.1	- 2.4
427	41 25.79	81 41.9	775	.23200	.30802	- 3.1	-29.5	- 3.0
428	41 29.98	81 41.6	669.5	.24254	.31427	- 8.8	-31.6	- 5.6
429	41 29.71	81 11.6	1306	.20379	.31387	+12.8	-31.7	- 2.7
430	41 26.82	81 12.5	1159	.20814	.30955	+ 7.6	-31.9	- 2.3
431	41 24.84	81 12.8	1283	.19815	.30660	+12.2	-31.5	- 1.4
432	41 22.67	81 13.1	1202	.19972	.30336	+ 9.4	-31.5	- 0.9
433	41 19.88	81 13.3	1203	.19547	.29920	+ 9.4	-31.6	- 0.2
434	41 16.50	81 13.5	1083	.19731	.29417	+ 5.0	-31.9	- 0.4
435	41 14.31	81 13.9	1245.4 B	.18392	.29089	+10.1	-32.3	- 0.7
436	41 12.13	81 14.8	1181.5	.18463	.28764	+ 8.1	-32.1	+ 0.7
437	41 09.46	81 14.6	1141.5 B	.18391	.28367	+ 7.6	-31.3	+ 0.8
438	41 09.30	81 21.3	1170 P	.18565	.28343	+12.3	-27.6	+ 4.4
439	41 06.70	81 14.6	1107	.18288	.27955	+ 7.5	-30.3	+ 2.0
440	41 03.85	81 14.7	1119	.17875	.27531	+ 8.7	-29.4	+ 3.2
441	41 01.54	81 14.9	1136	.17552	.27186	+10.5	-28.2	+ 4.5
442	40 59.04	81 15.0	1170	.17110	.26814	+13.0	-26.9	+ 6.1
443	40 56.69	81 15.1	1220.5	.16548	.26465	+15.6	-26.0	+ 7.1
444	40 54.03	81 15.3	1243.5	.15883	.26068	+15.1	-27.2	+ 6.0
445	40 50.96	81 15.1	1122	.16168	.25612	+11.1	-27.1	+ 6.4
446	40 48.82	81 16.8	1134.5	.15747	.25294	+11.2	-27.4	+ 6.1
447	40 46.57	81 05.5	1123.5	.14668	.24959	+ 2.8	-35.5	- 1.2
448	40 49.47	81 06.0	1305	.14109	.25390	+ 9.9	-34.5	- 0.4
449	40 52.33	81 06.4	1239	.15010	.25816	+ 8.5	-33.7	+ 0.2
450	40 54.09	81 06.4	1228	.15374	.26077	+ 8.5	-33.4	+ 0.3
451	40 57.73	81 06.5	1054	.17053	.26620	+ 3.5	-32.4	+ 1.0
452	41 00.40	81 05.9	1047.5	.17490	.27017	+ 3.3	-32.4	+ 0.7
453	41 03.98	81 05.9	1120	.17548	.27550	+ 5.3	-32.8	0.0
454	41 05.95	81 05.9	1079.5	.18063	.27844	+ 3.7	-33.1	- 0.5
455	41 08.05	81 03.1	979.5	.18743	.28156	- 2.0	-35.4	- 2.9

No.	Latitude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T = 30 Km, in mgal
456	41° 10'.63	81° 03'.0	986	980.19260	980.28541	- 0.1	-33.7	- 1.4
457	41 13.26	80 58.8	947	.19737	.28933	- 2.9	-35.2	- 3.0
458	41 14.73	80 59.9	957	.20032	.29152	- 1.2	-33.8	- 1.8
459	41 16.20	81 04.8	1014.5	.19958	.29372	+ 1.3	-33.3	- 1.6
460	41 18.62	81 05.9	1040	.20226	.29732	+ 2.8	-32.7	- 1.2
461	41 21.28	81 04.8	1146.5	.19929	.30129	+ 5.8	-33.2	- 1.9
462	41 24.63	81 03.6	1199	.20105	.30629	+ 7.5	-33.3	- 2.4
463	41 26.61	81 03.1	1140	.20861	.30924	+ 6.6	-32.2	- 1.8
464	41 29.60	81 03.1	1107.5	.21552	.31371	+ 6.0	-31.8	- 1.8
465	41 34.70	81 03.2	1242	.21378	.32132	+ 9.3	-33.0	- 4.4
466	41 37.43	81 03.3	1222	.21962	.32539	+ 9.2	-32.5	- 4.5
467	41 40.76	81 02.7	1302	.21911	.33037	+11.2	-33.2	- 6.0
468	41 43.49	81 03.0	895	.24817	.33444	- 2.1	-32.6	- 5.9
469	41 46.23	81 03.0	741.5 B	.26121	.33853	- 7.5	-32.8	- 6.6
470	41 49.19	81 03.0	635.5	.27177	.34296	-11.4	-33.1	- 7.3
471	41 45.40	81 16.2	617	.27339	.33730	- 5.9	-26.9	- 1.1
472	41 43.44	81 14.6	676.5 B	.27006	.33437	- 0.7	-23.7	+ 2.3
473	41 40.97	81 13.7	877.5	.26368	.33068	+15.5	-14.4	+12.0
474	41 38.45	81 13.0	1131.5	.23462	.32691	+14.1	-24.4	+ 2.5
475	41 36.14	81 12.9	1159.5	.22646	.32347	+12.0	-27.5	- 0.2
476	41 33.71	81 12.1	1176.5	.21813	.31984	+ 9.0	-31.1	- 3.1
477	41 29.32	80 52.1	911.5	.23043	.31329	+ 2.9	-28.2	+ 2.3
478	41 26.06	80 52.1	888	.22692	.30842	+ 2.0	-28.2	+ 2.8
479	41 23.27	80 52.1	903.5	.22081	.30426	+ 1.5	-29.3	+ 2.1
480	41 21.77	80 51.8	899.5 B	.21840	.30202	+ 1.0	-29.7	+ 1.9
481	41 19.64	80 51.4	932	.21272	.29884	+ 1.6	-30.2	+ 1.7
482	41 17.53	80 50.8	959.5	.20682	.29570	+ 1.4	-31.3	+ 0.9
483	41 15.97	80 50.2	903	.20644	.29337	- 2.0	-32.8	- 0.4
484	41 12.39	80 50.6	928	.19500	.28803	- 5.7	-37.4	- 4.7
485	41 08.62	80 51.4	971	.18562	.28241	- 5.5	-38.6	- 5.5
486	41 07.09	80 51.4	990.5	.18160	.28013	- 5.4	-39.1	- 6.0
487	41 04.60	80 51.4	1028	.17497	.27642	- 4.8	-39.8	- 6.2
488	41 02.46	80 51.4	1051	.17012	.27324	- 4.3	-40.1	- 6.2
489	41 00.17	80 51.4	1151.5	.16046	.26982	- 1.0	-40.3	- 6.2
490	40 58.38	80 51.4	1082.6 B	.16124	.26716	- 4.1	-41.0	- 6.7
491	40 56.68	80 51.4	1191.5 B	.15133	.26463	- 1.2	-41.8	- 7.3
492	40 54.06	80 51.8	1168.0 B	.14739	.26073	- 3.5	-43.3	- 8.5
493	40 51.89	80 53.2	1330	.13363	.25750	+ 1.2	-44.1	- 9.3
494	40 48.83	80 55.3	1288	.13034	.25295	- 1.5	-45.4	-10.6
495	40 46.66	80 55.8	1236	.13096	.24972	- 2.5	-44.6	- 9.8
496	40 48.67	80 45.5	1216	.12430	.25272	-14.0	-55.5	-20.2
497	40 50.59	80 44.2	1296	.12353	.25557	-10.1	-54.3	-19.0
498	40 52.90	80 42.5	1108.5	.13592	.25901	-18.8	-56.6	-21.4
499	40 55.61	80 40.8	1099	.14481	.26304	-14.9	-52.3	-17.1
500	40 59.27	80 40.1	1046.5	.15737	.26848	-12.7	-48.3	-13.2
501	41 01.46	80 39.5	1115	.15912	.27174	- 7.7	-45.7	-10.7
502	41 02.79	80 39.5	1052	.16471	.27373	-10.1	-45.9	-10.9
503	41 04.37	80 38.7	1098.5	.16489	.27608	- 7.9	-45.3	-10.4
504	41 08.47	80 39.9	1092.5	.17459	.28219	- 4.8	-42.1	- 8.0
505	41 10.42	80 39.8	1082.5	.17877	.28510	- 4.5	-41.4	- 7.5
506	41 12.50	80 39.8	1111	.18189	.28820	- 1.8	-39.7	- 6.1
507	41 16.33	80 39.8	1181.5	.18450	.29391	+ 1.7	-38.5	- 5.5
508	41 18.67	80 39.3	1139	.19144	.29740	+ 1.2	-37.6	- 4.8
509	41 21.23	80 39.3	1107	.19944	.30121	+ 2.4	-35.4	- 3.1
510	41 24.75	80 39.3	1075.5	.20836	.30647	+ 3.0	-33.6	- 1.7
511	41 26.83	80 39.9	1064	.21395	.30957	+ 4.5	-31.8	- 0.2
512	41 29.53	80 39.9	1059.5	.21864	.31360	+ 4.7	-31.4	- 0.2
513	41 34.27	80 40.0	1075.5	.22392	.32067	+ 4.4	-32.2	- 1.7
514	41 37.40	80 40.0	1026	.23267	.32535	+ 3.8	-31.1	- 1.1
515	41 39.61	80 40.1	976.5	.23898	.32865	+ 2.2	-31.1	- 1.6
516	41 42.43	80 40.2	983	.24226	.33286	+ 1.9	-31.6	- 2.7
517	41 44.23	80 40.1	963.5	.24584	.33555	+ 0.9	-31.9	- 3.7
518	41 46.92	80 40.1	928.5	.25193	.33956	- 0.3	-31.9	- 4.4
519	41 49.50	80 39.8	860.5	.25983	.34343	- 2.7	-32.0	- 5.1
520	41 51.38	80 40.0	886	.26059	.34624	- 2.3	-32.5	- 6.1

No.	Latitude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskenan Isost. Anomaly T = 30 Km, in mgal
521	41° 53.'80	80° 41.'0	716	980.27434	980.34986	- 8.2	-32.6	- 6.7
522	41 55.42	80 41.9	635.5	.27994	.35228	-12.6	-34.2	- 8.4
523	41 52.86	80 51.6	622	.27529	.34845	-14.6	-35.8	- 9.9
524	41 49.29	80 51.1	755	.26137	.34311	-10.7	-36.4	-10.1
525	41 47.38	80 51.3	859	.25290	.34026	- 6.6	-35.8	- 9.0
526	41 43.67	80 51.3	816	.25239	.33471	- 5.6	-33.4	- 5.9
527	41 41.67	80 51.3	816	.25101	.33172	- 4.0	-31.8	- 3.8
528	41 39.60	80 51.6	808	.24920	.32863	- 3.4	-31.0	- 2.4
529	41 37.24	80 51.9	842	.24512	.32511	- 0.8	-29.5	- 0.4
530	41 34.58	80 51.9	869	.23972	.32114	+ 0.3	-29.3	+ 0.6
531	41 30.83	80 34.2	1132	.21234	.31554	+ 3.3	-35.3	- 4.1
532	41 28.08	80 34.2	1052	.21240	.31144	- 0.1	-35.9	- 4.3
533	41 25.53	80 35.3	956.5	.21452	.30763	- 3.1	-35.7	- 3.8
534	41 22.04	80 34.1	1019.5	.20444	.30242	- 2.1	-36.8	- 4.4
535	41 20.83	80 34.1	1106	.19684	.30062	+ 0.2	-37.4	- 4.8
536	41 18.28	80 34.1	1202.5	.18643	.29682	+ 2.7	-38.3	- 5.3
537	41 15.83	80 34.1	1031.5	.19206	.29316	- 4.1	-39.2	- 5.8
538	41 12.81	80 34.1	1164	.17828	.28866	- 0.9	-40.6	- 6.7
539	41 11.59	80 34.1	1054.5	.18254	.28684	- 5.1	-41.0	- 7.0
540	41 08.02	80 34.1	1090.5	.17276	.28152	- 6.2	-43.4	- 8.8
541	41 05.85	80 34.1	1079	.16799	.27829	- 8.6	-45.6	-10.6
542	41 03.99	80 34.6	1119	.16065	.27552	- 9.6	-47.7	-12.6
543	41 00.26	80 35.7	1109	.15124	.26996	-14.4	-52.2	-17.0
544	40 58.99	80 34.6	1120.5	.14550	.26806	-17.2	-55.3	-20.0
545	40 56.64	80 33.4	1257.3 B	.13261	.26457	-13.5	-56.3	-21.0
546	40 54.67	80 32.0	1139.0 B	.13158	.26164	-22.9	-61.7	-26.3
547	40 51.86	80 33.5	1202	.12393	.25746	-20.5	-61.4	-25.9
548	40 50.21	80 32.4	1013.5	.13163	.25500	-28.0	-62.6	-27.0
549	41 56.67	80 33.3	662.1 B	.28079	.35414	-11.1	-33.6	- 7.7
550	41 54.07	80 34.3	838.5	.26697	.35025	- 4.4	-33.0	- 7.0
551	41 52.23	80 34.3	903	.25983	.34750	- 2.7	-33.5	- 7.1
552	41 49.11	80 34.3	992.5	.25419	.34284	+ 4.7	-29.1	- 1.8
553	41 46.90	80 34.3	973.5	.24818	.33953	+ 0.2	-33.0	- 5.0
554	41 44.39	80 34.2	1007.5	.24191	.33579	+ 0.9	-33.4	- 4.6
555	41 41.84	80 34.2	1059.5	.23488	.33197	+ 2.6	-33.5	- 4.2
556	41 39.25	80 34.2	1088	.22925	.32810	+ 3.4	-33.7	- 3.7
557	41 36.46	80 34.3	1092.0 B	.22441	.32395	+ 3.2	-34.0	- 3.6
558	41 34.69	80 34.3	1112	.22040	.32130	+ 3.7	-34.2	- 3.6
559	40 05.35	83 01.1	883	.09688	.18840	- 8.5	-38.6	- 8.5
560	40 09.44	83 01.1	956	.09976	.19446	- 4.8	-37.4	- 7.0
561	40 12.83	83 02.0	947	.10654	.19949	- 3.9	-36.1	- 5.7
562	40 14.54	83 03.1	928	.11009	.20202	- 4.6	-36.3	- 5.8
563	40 18.22	83 04.1	897	.11622	.20748	- 6.9	-37.5	- 7.0
564	40 18.40	83 10.1	880	.12391	.20774	- 1.1	-31.0	- 0.6
565	40 14.74	83 09.1	856	.12168	.20232	- 0.1	-29.3	+ 1.0
566	40 11.76	83 11.9	968	.11763	.19790	+10.8	-22.2	+ 8.1
567	40 09.38	83 14.2	999.5 B	.11543	.19733	+12.1	-22.0	+ 8.2
568	39 59.90	83 16.9	923.5	.10782	.18033	+14.4	-17.1	+12.9
569	40 02.45	83 15.2	899	.11210	.18411	+12.6	-18.1	+11.9
570	40 06.26	83 16.8	935.2 B	.11767	.18976	+15.9	-16.0	+14.1
571	40 13.62	83 22.2	1001.7 B	.12375	.20066	+17.3	-16.8	+13.6
572	40 10.25	83 23.2	1002.9 B	.12086	.19566	+19.5	-14.6	+15.8
573	40 06.70	83 23.4	980.9 B	.11511	.19041	+17.0	-16.5	+13.8
574	40 02.80	83 24.6	990.8 B	.10775	.18462	+16.3	-17.4	+13.0
575	39 59.56	83 25.2	1013.9 B	.09488	.17983	+10.4	-24.1	+ 6.3
576	39 56.05	83 27.1	1042.7 B	.09403	.17463	+17.5	-18.0	+12.4
577	39 53.20	83 27.0	1054.6 B	.09859	.17042	+27.4	- 8.6	+21.8
578	39 49.12	83 28.2	1080	.09802	.16438	+35.2	- 1.6	+18.9
579	39 45.33	83 28.9	1075	.08998	.15878	+32.3	- 4.3	+26.2
580	39 41.74	83 27.2	1034	.09226	.15347	+36.1	+ 0.8	+31.2
581	39 38.92	83 26.0	996	.10189	.14931	+46.3	+12.3	+42.5
582	39 36.49	83 23.9	997.4 B	.10847	.14571	+56.6	+22.6	+52.6
583	39 46.48	83 12.8	916.5	.10890	.16048	+34.6	+ 3.4	+33.1
584	39 50.30	83 17.3	985.7 B	.11814	.16612	+44.7	+11.2	+41.2
585	39 53.35	83 16.9	980.2	.11886	.17064	+40.4	+ 7.0	+36.9

No.	Latitude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T=30 Km, in mgal
586	39° 51.'73	83° 38.'2	1147.3	980.07425	980.16824	+13.9	-25.2	+ 5.4
587	39 47.98	83 37.1	1140.6	.06828	.16270	+12.9	-26.0	+ 4.5
588	39 44.26	83 36.8	1117.0 B	.06305	.15719	+10.9	-27.1	+ 3.4
589	39 40.25	83 34.6	1059	.07174	.15127	+20.1	-16.0	+14.3
590	39 36.40	83 33.9	1040	.08400	.14558	+36.2	+ 0.8	+30.9
591	39 41.20	83 55.8	939.2 B	.07052	.15268	+ 6.2	-25.8	+ 3.6
592	39 43.43	83 51.5	951.2	.05945	.15597	- 7.0	-39.5	- 9.8
593	39 44.65	83 48.4	1053.8 B	.04923	.15777	- 9.4	-45.3	-15.4
594	39 51.27	83 49.6	1046.1	.06988	.16756	+ 0.7	-34.9	- 4.8
595	39 47.57	83 49.3	1003.1	.06839	.16209	+ 0.6	-33.5	- 3.5
596	39 35.25	84 02.2	869	.06271	.14389	+ 0.6	-29.0	- 0.2
597	39 39.41	84 04.2	953.5	.06509	.15003	+ 4.8	-27.7	+ 1.1
598	39 41.56	84 02.6	909.5	.07239	.15321	+ 4.7	-26.3	+ 2.7
599	39 44.21	83 59.3	923.6	.07592	.15712	+ 5.7	-25.8	+ 3.5
600	39 47.38	84 01.3	943.8 B	.08134	.16181	+14.0	-18.2	+11.5
601	39 51.00	84 03.5	826.5	.09356	.16716	+ 4.1	-24.0	+ 5.7
602	39 50.05	84 11.9	880.7	.09303	.16575	+10.1	-19.9	+ 9.8
603	39 45.68	84 10.9	757.3 B	.09097	.15930	+ 2.9	-22.9	+ 5.9
604	39 41.27	84 10.1	1006.6	.06551	.15293	+ 7.3	-27.0	+ 1.6
605	39 37.38	84 23.0	728.1 B	.06654	.14703	-12.0	-36.8	- 8.4
606	39 40.79	84 25.7	880.5 B	.06060	.15207	- 8.6	-38.6	- 9.9
607	39 44.74	84 25.3	973.5 B	.06085	.15790	- 5.5	-38.6	- 9.5
608	39 49.09	84 25.4		.06829	.16133			
609	39 53.51	82 59.8	716	.08006	.17087	-23.5	-47.9	-18.4
610	39 49.99	83 00.0	710	.06939	.16566	-29.5	-53.7	-24.3
611	39 46.40	82 59.4	704.7	.05772	.16036	-36.4	-60.4	-31.1
612	39 43.40	82 59.2	702.1	.05348	.15592	-36.4	-60.3	-31.1
613	39 40.14	82 56.6		.05419	.15111			
614	39 36.06	82 56.7	694.8	.05330	.14508	-26.4	-50.1	-21.3
615	39 39.07	82 44.8	917.5	.04507	.14952	-18.2	-49.4	-20.5
616	39 42.10	82 46.6	975	.04200	.15401	-20.3	-53.5	-24.4
617	39 46.46	82 45.7	1043.4	.04338	.16045	-18.9	-54.5	-25.1
618	39 50.53	82 44.6	807.3	.06532	.16646	-25.2	-52.7	-23.0
619	39 53.99	82 48.3	794.3	.06769	.17159	-29.2	-56.3	-26.5
620	39 11.18	84 25.2	796.1 B	.00555	.10840	-28.0	-55.1	-29.0
621	39 14.24	84 22.9	871.0 B	.00679	.11290	-24.2	-53.9	-27.3
622	39 18.19	84 24.7	632.7 B	.03285	.11872	-26.4	-47.9	-21.1
623	39 22.16	84 22.1	807.0 B	.03283	.12458	-15.8	-43.3	-16.2
624	39 26.23	84 20.9	796	.04105	.13057	-14.6	-41.8	-14.2
625	39 29.61	84 20.2	743.7 B	.04953	.13556	-16.1	-41.4	-13.5
626	39 33.40	84 20.8	667	.06068	.14115	-17.7	-40.5	-12.3
627	39 48.00	84 03.4	815.1 B	.09233	.16272	+ 6.3	-21.5	+ 7.7
628	39 48.30	84 03.4	819	.09213	.16316	+ 6.0	-21.9	+ 7.6
629	39 37.19	84 09.5	972	.05798	.14675	+ 2.7	-30.5	- 2.0
630	39 32.76	84 10.0	974	.04678	.14020	- 1.8	-35.0	- 6.6
631	39 29.41	84 11.2	936	.04059	.13526	- 8.4	-40.3	-12.0
632	39 25.19	84 12.3	806	.03638	.12904	-16.8	-44.3	-16.2
633	39 20.76	84 13.1	824	.02465	.10216	-20.4	-48.4	-20.5
634	39 16.85	84 13.7	743	.02051	.11675	-26.4	-51.7	-24.2
635	39 14.14	84 12.7	810	980.01011	.11276	-26.5	-54.1	-26.7
636	39 10.76	84 09.8	883	979.99754	.10778	-27.2	-57.3	-29.8
637	39 13.32	84 45.0	790.6 B	980.02787	.11155	- 9.3	-36.2	-10.3
638	39 17.01	84 43.9	564	.05842	.11698	- 5.5	-24.7	+ 1.6
639	39 20.85	84 46.0	643.8 B	.06826	.12264	+ 6.2	-15.8	+11.1
640	39 25.24	84 45.7	891	.06797	.12911	+22.7	- 7.7	+19.7
641	39 29.61	84 45.6	955	.06994	.13556	+24.2	- 8.3	+19.7
642	39 30.65	84 36.8	742.7 B	.08345	.13709	+16.2	- 9.1	+18.8
643	39 28.29	84 32.7	641.9 B	.07919	.13361	+ 6.0	-15.9	+11.7
644	39 24.03	84 33.7	602.7 B	.07543	.12733	+ 4.8	-15.8	+11.2
645	39 19.62	84 33.7	661.3 B	.05552	.12083	- 3.1	-25.6	+ 1.0
646	39 15.50	84 33.3	826.5 B	.02438	.11477	-12.6	-40.8	-14.6
647	39 13.28	84 32.9	827.0 B	.01493	.11149	-18.8	-47.0	-20.9
648	39 09.89	84 31.2	494.6 B	.02447	.10650	-35.5	-52.4	-26.7
649	39 44.63	84 45.5	1140.6 B	.03913	.15774	-11.3	-50.2	-20.8
650	39 40.69	84 46.3	1025.4 B	.05360	.15192	- 1.9	-36.8	- 7.7

No.	Latitude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T = 30 Km, in mgal
651	39° 36.04	84° 44.4'	978.0 B	980.07300	980.14505	+19.9	-13.4	+15.3
652	39 32.55	84 43.9	847	.07127	.13989	+11.0	-17.8	+10.4
653	39 33.76	84 39.6	762.2 B	.08468	.14168	+14.7	-11.3	+17.0
654	39 37.76	84 38.6	841.1 B	.07214	.14759	+ 3.7	-25.0	+ 3.8
655	39 40.97	84 37.9	990.3 B	.05354	.15233	- 5.6	-39.4	-10.3
656	39 44.28	84 37.1	1037.2 B	.04763	.15722	-12.0	-47.4	-18.1
657	39 47.60	84 37.9	1068.2 B	980.04867	.16214	-13.0	-49.4	-19.6
658	38 49.94	83 53.7	915	979.96795	.07716	-23.1	-54.3	-27.8
659	38 54.10	83 54.1	933	.97701	.08328	-18.5	-50.3	-23.3
660	38 57.86	83 54.7	889.3 B	.98557	.08879	-19.6	-49.9	-22.3
661	39 01.73	83 55.1	922.5 B	.99032	.09448	-17.4	-48.8	-20.8
662	39 04.43	83 54.8	951.8 B	.99555	.09846	-13.4	-45.8	-17.6
663	39 06.96	83 56.4	950.5 B	.99789	.10218	-14.9	-47.3	-19.0
664	38 49.14	83 43.0	915.2 B	.99097	.07599	+ 1.1	-30.1	- 3.0
665	38 45.15	83 42.8	901	.98882	.07014	+ 2.8	-27.9	- 1.5
666	38 44.06	83 44.1	922	.98550	.06854	+ 3.7	-27.7	- 1.7
667	38 41.74	83 34.0	520	.99750	.06514	-18.7	-36.4	- 9.6
668	38 48.67	83 31.4	791.5	979.99097	.07530	- 9.9	-36.8	- 8.9
669	39 00.91	83 09.3	1066	980.00384	.09328	+10.8	-25.5	+ 3.1
670	38 59.28	83 12.8	1194	979.99979	.09088	+21.2	-19.5	+ 9.2
671	38 55.34	83 14.9	615.3 B	980.02768	.08510	+ 0.5	-20.5	+ 8.1
672	38 51.31	83 12.2	585.5	.01976	.07918	- 4.4	-24.3	+ 4.1
673	38 47.63	83 15.4	770	980.00354	.07377	+ 2.2	-24.0	+ 4.2
674	38 43.66	83 15.7	1004	979.98358	.06795	+10.1	-24.1	+ 4.0
675	38 39.76	83 14.1	721.4 B	979.99495	.06222	+ 0.6	-24.0	+ 4.2
676	38 52.77	82 59.7	554.3 B	980.02085	.08132	- 8.3	-27.2	+ 0.6
677	38 48.66	82 59.1	562.0 B	.00979	.07529	-12.6	-31.8	- 4.0
678	38 45.60	82 59.4	577.1 B	.01512	.07080	- 1.4	-21.1	+ 6.8
679	38 49.36	82 50.6	568.5	.00599	.07631	-16.8	-36.2	- 8.5
680	38 52.48	82 51.9	615.9 B	.00710	.08090	-15.9	-36.9	- 9.2
681	38 56.57	82 51.9	681.5	980.00497	.08690	-17.8	-41.0	-13.4
682	38 59.59	82 50.8	777	979.99968	.09134	-18.6	-45.0	-17.5
683	38 48.16	82 36.5	776	.99306	.07455	- 8.5	-34.9	- 7.0
684	38 44.99	82 38.2	658	.99757	.06990	-10.4	-32.9	- 4.8
685	38 40.80	82 39.7	669	.99610	.06375	- 4.7	-27.5	+ 1.2
686	38 38.60	82 40.6	604	.99787	.06053	- 5.8	-26.4	+ 2.6
687	38 35.00	82 38.2	561	.99202	.05525	-10.5	-29.6	- 0.3
688	38 25.17	82 29.6	560	.97146	.04085	-16.7	-35.8	- 5.5
689	38 28.75	82 23.5	566	.97622	.04609	-16.6	-35.9	- 5.7
690	38 32.99	82 23.3	602.6	.98512	.05230	-10.5	-31.0	- 1.1
691	38 37.00	82 22.3	960	.96847	.05818	+ 0.6	-32.1	- 2.5
692	38 40.97	82 23.0	695.5	.98602	.06400	-12.6	-36.3	- 7.0
693	38 44.79	82 22.0	654.5	.98850	.06961	-19.6	-41.8	-12.8
694	38 48.87	82 24.1	598	.99456	.07560	-24.8	-45.2	-16.7
695	38 45.28	82 12.6	737	.98882	.07033	-12.2	-37.3	- 7.8
696	38 41.65	82 11.5	553	.99513	.06500	-17.8	-36.7	- 6.9
697	38 38.41	82 10.7	552	.99066	.06025	-17.7	-36.5	- 6.4
698	38 35.98	82 14.9	621	.98359	.05669	-14.7	-35.8	- 5.8
699	38 32.21	82 18.1	564	979.98388	.05996	-23.0	-42.2	-12.1
700	40 01.17	82 48.9	975	980.07016	.18222	-20.4	-53.6	-23.4
701	40 04.86	82 47.4	1076	.07039	.18767	-16.1	-52.7	-22.2
702	40 08.92	82 48.5	1047.8	.07770	.19369	-17.4	-53.1	-22.4
703	40 12.21	82 48.3	1059	.08354	.19857	-15.4	-51.5	-20.5
704	40 09.19	82 41.1	1159.9 B	.07245	.19409	-12.5	-52.1	-21.2
705	40 05.76	82 39.8	1120.3	.07605	.18901	- 7.6	-45.8	-15.1
706	40 02.30	82 40.2	1230	.06545	.18388	- 2.7	-44.6	-14.1
707	39 54.26	82 39.5	992	.06561	.17198	-13.1	-46.9	-16.9
708	39 51.03	82 36.9	867.1 B	.06423	.16720	-21.4	-51.0	-21.2
709	39 47.96	82 36.9	973.6	.05702	.16267	-14.1	-47.2	-17.6
710	39 42.84	82 36.3	845.6 B	.05435	.15510	-21.2	-50.0	-20.8
711	39 42.20	82 25.6	798.2 B	.04688	.15416	-32.2	-59.4	-30.1
712	39 45.76	82 26.4	864.1 B	.05605	.15941	-22.1	-51.5	-22.0
713	39 50.15	82 25.9	1077.4 B	.04235	.16590	-22.2	-58.9	-29.1
714	39 54.65	82 24.6	900.2 B	.07416	.17256	-13.7	-44.4	-14.3
715	40 01.53	82 26.2	845.5 B	.07849	.18274	-24.7	-53.5	-22.9

No.	Latitude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T = 30 Km, in mgal
716	40° 05'.99	82° 25'.5	886.1 B	980.08582	980.18935	-20.2	-50.4	-19.5
717	40 10.45	82 25.2	905.8 B	.09421	.19596	-16.6	-47.4	-16.3
718	40 14.22	82 27.1	967.3 B	.09468	.20155	-15.9	-48.8	-17.4
719	40 16.21	82 21.5	1167.0 B	.09688	.20450	+ 2.2	-37.6	- 6.2
720	40 14.06	82 16.9	1151.5	.09800	.20121	+ 5.0	-34.2	- 2.9
721	40 11.47	82 13.9	929.3	.10884	.19747	- 1.2	-32.9	- 1.8
722	40 08.32	82 12.4	815.8	.11044	.19280	- 5.6	-33.4	- 2.5
723	40 05.58	82 14.9	908	.09652	.18874	- 6.8	-37.8	- 7.0
724	40 04.26	82 17.9	813.5	.09745	.18679	-12.8	-40.5	- 9.8
725	40 00.27	82 17.5	953.5	.07812	.18088	-13.1	-45.6	-15.1
726	39 52.57	82 16.2	848.8	.07128	.16904	-17.9	-46.8	-16.9
727	39 48.47	82 17.9	1091.0 B	.04691	.16341	-13.9	-51.1	-21.4
728	39 45.42	82 06.4	1020.8	.06058	.15891	- 2.3	-37.1	- 7.3
729	39 48.50	82 04.5	742.9 B	.08403	.16346	- 9.6	-34.9	- 5.0
730	39 52.90	82 03.6	819.3	.08867	.16997	- 4.2	-32.2	- 2.2
731	39 59.97	81 57.5	956.2	.09162	.18044	+ 0.2	-32.4	- 1.6
732	40 04.65	81 58.5	762.3	.11150	.18736	- 4.2	-30.1	+ 0.9
733	40 08.61	82 00.9	732.5 B	.11914	.19312	- 5.2	-30.2	+ 1.0
734	40 11.83	81 50.8	823.3	.11888	.19800	- 1.7	-29.7	+ 2.3
735	40 08.97	81 48.2	779	.11352	.19377	- 7.0	-33.5	- 1.7
736	40 05.74	81 48.3	819.8	.10493	.18898	- 6.9	-34.9	- 3.4
737	40 03.46	81 52.2	1006.6	.09179	.18560	- 0.9	-35.2	- 4.1
738	40 00.23	81 55.1	878.2 B	.09562	.18082	- 2.6	-32.5	- 1.6
739	40 03.06	81 44.6	1117.1 B	.08072	.18501	+ 0.8	-37.3	- 5.9
740	40 06.26	81 42.6	1085.2	.08737	.18976	- 0.3	-37.3	- 5.7
741	40 10.50	81 43.7	808	.11324	.19603	- 6.8	-34.3	- 2.3
742	40 14.19	81 43.1	822.3	.12024	.20150	- 3.9	-31.9	+ 0.7
743	40 18.32	81 45.1	782.1	.13282	.20762	- 1.2	-27.9	+ 4.8
744	40 21.68	81 43.0	929.1	.13029	.21261	+ 5.1	-26.6	+ 6.2
745	40 23.80	81 33.6	931.7 B	.13034	.21576	+ 2.2	-29.5	+ 3.6
746	40 19.27	81 34.3	835.1	.12783	.20904	- 2.7	-31.1	+ 1.9
747	40 16.44	81 36.4	805.4 B	.12300	.20484	- 6.1	-33.5	- 0.6
748	40 14.13	81 31.8	1141.3	.09686	.20141	+ 2.8	-36.1	- 3.3
749	40 10.37	81 32.1	1057.3	.09409	.19584	- 2.3	-38.3	- 5.9
750	40 06.06	81 33.7	785.1	.10275	.18946	-12.9	-39.6	- 7.7
751	39 58.25	81 32.3	823.5 B	.08578	.17798	-14.7	-42.8	-10.8
752	39 54.18	81 32.9	806.1 B	.07793	.17193	-18.2	-45.6	-13.6
753	39 49.94	81 34.5	774.6	.07049	.16559	-22.2	-48.6	-16.6
754	39 45.41	81 32.0	743.9 B	.06397	.15890	-25.0	-50.3	-18.2
755	39 48.52	81 19.8	1181	.04703	.16349	- 5.4	-45.6	-12.3
756	39 51.88	81 19.2	840.5	.07145	.16846	-18.0	-46.6	-13.3
757	39 55.87	81 17.9	902.3	.07356	.17437	-15.9	-46.7	-13.3
758	39 58.06	81 18.0	874.9 B	.07935	.17761	-16.0	-45.8	-12.3
759	40 00.45	81 17.9	1171.5	.06535	.18115	- 5.6	-45.5	-12.0
760	40 45.87	82 04.9	1007	.17693	.24855	+23.1	-11.2	+20.6
761	40 41.88	82 06.2	1028.9	.16353	.24262	+17.7	-17.4	+14.7
762	40 38.90	82 08.1	985.3	.15889	.23819	+13.4	-20.2	+12.0
763	40 35.37	82 07.4	1126	.14205	.23294	+15.0	-23.4	+ 8.9
764	40 31.72	82 07.7	1247.3	.12627	.22752	+16.1	-26.4	+ 5.8
765	40 27.65	82 05.5	952.2	.13848	.22147	+ 6.6	-25.9	+ 6.1
766	40 23.26	82 04.9	1162.3	.12022	.21496	+14.6	-25.0	+ 6.9
767	40 18.96	82 03.4	1008.3	.11771	.20857	+ 4.0	-30.4	+ 1.4
768	40 44.29	81 56.3	919.6 B	.17934	.24620	+19.6	-11.7	+20.4
769	40 41.20	81 57.1	979.2	.16858	.24161	+19.1	-14.3	+17.9
770	40 36.45	81 54.8	841.7 B	.16863	.23455	+13.2	-15.4	+17.0
771	40 31.80	81 54.3	828.8	.15733	.22764	+ 7.6	-20.6	+11.9
772	40 27.06	81 53.6	837	.14871	.22060	+ 6.8	-21.7	+10.8
773	40 23.66	81 52.2	898.3	.13976	.21555	+ 8.7	-21.9	+10.6
774	40 19.38	81 52.5	958.3	.12650	.20920	+ 7.4	-25.2	+ 7.3
775	40 25.90	81 42.6	1063.5	.13153	.21888	+12.7	-23.6	+ 9.1
776	40 29.45	81 40.9	1022.3	.14175	.22415	+13.8	-21.1	+11.7
777	40 33.12	81 42.2	1000.3	.15174	.22960	+16.2	-17.9	+14.9
778	40 37.24	81 40.4	1226	.14485	.23572	+24.4	-17.3	+15.5
779	40 41.35	81 41.3	1249	.15277	.24183	+28.4	-14.1	+18.6
780	40 44.03	81 41.9	1112	.16702	.24581	+25.8	-12.1	+20.5

No.	Latitude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T = 30 Km, in mgal
781	40° 44.24	81° 31.1'	981.5	980.16867	980.24613	+14.9	-18.6	+14.4
782	40 40.81	81 32.0	1002.5	.16182	.24102	+15.1	-19.1	+13.9
783	40 35.77	81 31.6	914.4 B	.15693	.23353	+ 9.4	-21.8	+11.4
784	40 31.38	81 28.6	899.0 B	.14594	.22701	+ 3.5	-27.1	+ 6.1
785	40 26.60	81 31.1	891.3	.13784	.21991	+ 1.8	-28.6	+ 4.5
786	40 23.60	81 20.1	826.6 B	.12904	.21546	- 8.7	-36.8	- 3.5
787	40 25.26	81 15.6	1175	.11191	.21793	+ 4.5	-35.5	- 1.9
788	40 25.94	81 10.5	990	.12236	.21713	- 1.6	-35.4	- 1.5
789	40 29.67	81 14.8	915.6 B	.14824	.22447	+ 9.9	-21.3	+12.5
790	40 33.49	81 16.7	995.5	.15119	.23105	+14.7	-19.2	+14.7
791	40 36.14	81 16.2	1142.5	.14736	.23409	+20.7	-18.2	+15.6
792	40 40.17	81 15.5	983.7 B	.16000	.24007	+12.5	-21.1	+12.7
793	40 44.26	81 14.8	1013.4	.15654	.24616	+ 5.7	-28.8	+ 5.0
794	40 41.28	81 10.8	998.5 B	.14884	.24173	+ 1.0	-33.0	+ 1.0
795	40 38.47	81 06.9	1049	.13837	.23755	- 0.5	-36.3	- 1.9
796	40 34.34	81 05.2	1131.7 B	.12372	.23141	- 1.2	-39.8	- 5.2
797	40 30.71	81 07.8	986.8	.12785	.22602	- 5.4	-39.0	- 5.6
798	40 27.94	81 05.9	1272.8 B	.10397	.22190	+ 1.8	-41.6	- 7.2
799	40 23.65	81 05.2	971.4 B	.11738	.21553	- 6.8	-39.9	- 5.5
800	40 27.09	80 51.7	1329.8 B	.09090	.22064	- 4.7	-50.0	-14.4
801	40 31.27	80 53.0	923.1 B	.12058	.22685	-19.4	-50.9	-15.5
802	40 34.10	80 52.0	1244.3	.10388	.23105	-10.1	-52.5	-17.1
803	40 37.00	80 51.2	1245.4	.10815	.23536	-10.0	-52.5	-17.1
804	40 42.05	80 52.1	1025.3	.12929	.24286	-17.1	-52.1	-16.9
805	40 43.26	80 43.2	1010	.12329	.24467	-26.4	-60.8	-25.3
806	40 39.78	80 41.6	1212.4	.10448	.23949	-21.0	-62.3	-26.6
807	40 36.40	80 38.7	706.7 B	.13004	.23447	-38.0	-62.0	-26.1
808	40 38.34	80 34.4	1239.9 B	.10677	.23736	-14.0	-56.2	-20.2
809	40 40.59	80 34.6	1108.4	.11006	.24070	-26.4	-64.2	-28.3
810	40 43.75	80 34.0	1080.3	.10850	.24540	-35.3	-72.1	-36.3
811	40 07.04	80 42.6	674	.09416	.19091	-33.4	-56.3	-19.3
812	40 11.46	80 41.1	659	.10960	.19745	-25.9	-48.3	-11.4
813	40 14.90	80 39.5	727	.10761	.20255	-26.6	-51.3	-14.5
814	40 18.07	80 37.2	673.7	.11285	.20725	-31.0	-54.0	-17.4
815	40 21.59	80 36.8	717.7 B	.11253	.21248	-32.4	-56.9	-20.4
816	40 25.71	80 36.9	707	.12049	.21859	-31.6	-55.7	-19.3
817	40 29.12	80 36.5	731	.12363	.22366	-31.3	-56.2	-20.0
818	40 31.97	80 39.9	1200.8	.09845	.22789	-16.5	-57.4	-21.4
819	40 22.84	80 51.4	1106	.10071	.21434	- 9.6	-47.3	-11.7
820	40 19.73	80 52.5	1221	.08657	.20972	- 8.3	-49.9	-14.2
821	40 16.35	80 55.6	991	.09508	.20471	-16.4	-50.2	-14.7
822	40 13.30	80 52.3	882	.09545	.20018	-21.8	-51.8	-16.0
823	40 11.06	80 57.4	1253	.06999	.19686	- 9.0	-51.7	-16.2
824	40 08.49	80 57.5	1207.5	.06957	.19306	- 9.9	-51.1	-15.5
825	40 04.13	81 03.0	1268.1 B	.06223	.18659	- 5.1	-48.2	-13.1
826	40 06.58	81 04.5	1284.8 B	.06774	.19023	- 1.6	-45.4	-10.4
827	40 09.75	81 08.1	910	.09498	.19492	-14.3	-45.4	-10.9
828	40 13.14	81 08.1	1264.3	.08239	.19995	- 1.4	-44.4	-10.0
829	40 14.99	81 03.4	1006	.09707	.20269	-11.0	-45.3	-10.4
830	40 17.13	81 05.1	1188.3	.08973	.20586	- 4.4	-44.8	-10.2
831	40 20.78	81 08.1	918	.11556	.21128	- 9.4	-40.6	- 6.6
832	40 19.03	81 18.7	864.7 B	.11869	.20868	- 8.6	-38.1	- 4.7
833	40 16.36	81 17.4	875.8 B	.11216	.20472	-10.2	-40.0	- 6.6
834	40 12.60	81 16.0	1004.3 B	.09757	.19915	- 7.1	-41.3	- 7.8
835	40 09.10	81 18.8	1208	.07885	.19396	- 1.5	-42.6	- 9.2
836	40 07.19	81 21.7	1002.1 B	.08835	.19113	- 8.5	-42.7	- 9.7
837	40 03.52	81 09.3	957.8 B	.08126	.18569	-14.3	-47.0	-12.8
838	39 59.37	81 10.5	1270.1 B	.05529	.17955	- 4.8	-48.1	-14.0
839	39 55.46	81 09.3	1284	.04966	.17377	- 3.3	-47.1	-12.9
840	39 51.55	81 08.1	1263.3	.04790	.16797	- 1.2	-44.3	-10.1
841	39 47.21	81 07.8	988.1 B	.06099	.16150	- 7.6	-41.2	- 7.0
842	39 50.26	80 57.2	1328	.04420	.16606	+ 3.1	-42.2	- 6.1
843	39 54.40	80 56.5	804.8 B	.07582	.17219	-20.7	-48.1	-12.1
844	39 58.49	80 58.0	1260	.05418	.17825	- 5.6	-48.5	-12.8
845	40 01.20	80 56.3	942.7 B	.07711	.18226	-16.5	-48.6	-12.7

No.	Latitude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T = 30 Km, in mgal
848	40° 43'.57	82° 14'.5	1290.5 B	980.15201	980.24513	+28.3	-15.7	+16.3
849	40 41.08	82 12.8	1109	.15854	.24143	+21.4	-16.4	+15.7
850	40 38.14	82 15.6	1194.8	.14440	.23706	+19.7	-21.0	+11.4
851	40 34.39	82 16.6	1222	.13254	.23148	+16.0	-25.6	+ 6.8
852	40 30.21	82 15.6	1027.5	.13654	.22527	+ 7.9	-27.1	+ 5.0
853	40 26.77	82 15.6	967.2 B	.13444	.22016	+ 5.3	-27.7	+ 4.2
854	40 24.00	82 16.7	941.6 B	.13126	.21606	+ 3.8	-28.3	+ 3.5
855	40 19.69	82 17.6	1157.5	.10792	.20966	+ 7.2	-32.3	- 0.7
856	40 17.50	82 27.1	996.1 B	.10157	.20641	-11.1	-45.1	-13.6
857	40 20.48	82 26.8	1122.5	.10439	.21083	- 0.8	-39.1	- 7.4
858	40 23.66	82 29.0	1053.4 B	.11616	.21555	- 0.3	-36.2	- 4.2
859	40 26.40	82 31.4	1040.7 B	.12146	.21961	- 0.3	-35.7	- 2.6
860	40 28.88	82 32.6	1133.1 B	.11951	.22330	+ 2.8	-35.8	- 3.6
861	40 33.00	82 32.9	1254.5	.11811	.22942	+ 6.7	-36.1	- 3.7
862	40 37.35	82 30.7	1126.5 B	.13348	.23588	+ 3.6	-34.8	- 2.3
863	40 41.76	82 30.7	1252	.13349	.24244	+ 8.8	-33.8	- 1.3
864	40 41.53	82 39.9	1385	.11894	.24210	+ 7.1	-40.1	- 8.1
865	40 37.26	82 39.8	1354.6 B	.11589	.23575	+ 7.6	-38.6	- 6.5
866	40 33.04	82 39.7	1214.5	.11817	.22948	+ 2.9	-38.5	- 6.5
867	40 29.17	82 40.9	1172.5	.11246	.22373	- 1.0	-40.9	- 8.9
868	40 25.21	82 42.1	1305.5	.09568	.21785	+ 0.6	-43.9	-12.2
869	40 21.70	82 40.2	1333.3	.08777	.21264	+ 0.6	-44.9	-13.2
870	40 18.41	82 41.9	1208.0 B	.08772	.20776	- 6.4	-47.6	-16.1
871	40 14.37	82 42.8	1156.5	.08226	.20177	-10.7	-50.1	-19.0
872	40 14.55	82 51.6	971.1 B	.09247	.20204	-18.2	-51.3	-20.3
873	40 19.16	82 48.4	1109.2 B	.09280	.20888	-11.7	-49.5	-18.2
874	40 23.32	82 49.7	1088	.10373	.21504	- 9.0	-46.0	-14.6
875	40 27.74	82 49.8	1185.5	.10701	.22161	- 3.1	-43.5	-12.0
876	40 30.96	82 49.0	1164	.11665	.22639	- 0.2	-42.1	-10.7
877	40 35.34	82 49.5	1151.5	.12226	.23290	- 2.3	-41.6	-10.1
878	40 39.26	82 49.3	1194	.12658	.23872	+ 0.2	-40.5	- 9.0
879	40 44.13	82 47.3	1166.0 B	.13267	.24596	- 3.6	-43.3	-11.8
880	40 44.35	82 59.6	1012.5	.13783	.24629	-13.2	-47.7	-17.2
881	40 41.54	83 00.4	1014.0	.13485	.24211	-11.9	-46.4	-15.9
882	40 37.81	83 01.5	1001.0 B	.12991	.23656	-12.5	-46.6	-15.9
883	40 34.92	83 02.5	987.5 B	.12932	.23227	-10.1	-43.7	-12.9
884	40 30.81	83 03.6	974.5	.12517	.22616	- 9.3	-42.5	-11.8
885	40 27.00	83 04.5	943	.12480	.22051	- 7.0	-39.1	- 8.5
886	40 22.69	83 03.6	942.5	.11715	.21411	- 8.3	-40.4	- 9.8
887	40 23.06	83 10.1	899.5	.11903	.21466	-10.8	-41.5	-11.1
888	40 27.07	83 10.2	910.0	.11622	.22061	-18.8	-49.8	-19.4
889	40 31.76	83 12.5	920.8 B	.11967	.22753	-21.3	-52.7	-22.4
890	40 35.05	83 13.0	914.4	.12408	.23246	-22.4	-53.5	-23.5
891	40 39.01	83 13.5	909.5	.13074	.23834	-22.0	-53.2	-23.5
892	40 43.50	83 15.1	884	.13987	.24502	-23.0	-53.1	-24.1
893	40 48.03	83 17.1	872.3 B	.14866	.25176	-21.0	-50.8	-22.5
894	40 45.16	83 25.2	903.5	.14135	.24750	-21.2	-52.0	-23.8
895	40 40.95	83 25.2	922.7 B	.13022	.24123	-24.2	-55.7	-26.8
896	40 37.33	83 27.4	953.0 B	.11899	.23585	-27.2	-59.7	-30.5
897	40 32.83	83 26.4	973	.11860	.22916	-19.0	-52.2	-22.3
898	40 28.96	83 26.0	990	.11226	.22341	-18.0	-51.8	-21.6
899	40 24.21	83 25.7	1008.5	.10860	.21637	-12.9	-47.3	-16.8
990	40 20.69	83 24.8	1017.4 B	.11371	.21114	- 1.7	-36.4	- 5.8
901	40 17.32	83 21.1	1040.5	.12459	.20614	+16.3	-19.1	+11.3
902	40 20.03	83 34.6	1103	.09648	.21016	- 9.9	-47.5	-16.8
903	40 22.58	83 36.2	1132.3 B	.09370	.21395	-13.7	-52.3	-21.7
904	40 26.98	83 35.4	1087.5	.09649	.22047	-21.7	-58.7	-28.3
905	40 30.96	83 34.4	1058.7 B	.10739	.22639	-19.4	-55.5	-25.5
906	40 34.67	83 35.5	1038.1 B	.10375	.23190	-30.5	-65.9	-27.5
907	40 38.88	83 36.5	998.5 B	.10678	.23816	-37.5	-71.5	-42.7
908	40 43.90	83 37.7	921	.11749	.24562	-41.5	-72.9	-44.9
909	40 47.29	83 38.9	950.8 B	.12353	.25066	-37.7	-70.1	-42.5
910	40 46.54	83 49.4	958.9 B	.12257	.24954	-36.8	-69.5	-42.1
911	40 42.37	83 50.6	978.6 B	.11944	.24334	-31.8	-65.2	-38.3
912	40 39.17	83 50.9	995.7 B	.11521	.23858	-29.7	-63.6	-35.5
913	40 35.88	83 50.5	1037	.11069	.23370	-25.5	-60.8	-31.9
914	40 31.54	83 51.5	1014.7 B	.11831	.22725	-13.5	-48.1	-18.6
915	40 27.90	83 48.6	1052.5	.11493	.22185	- 7.9	-43.8	-13.8

No.	Latitude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T = 30 Km, in mgal
916	40° 24'.60	83° 48'.0	1113	980.11008	980.21695	- 2.2	-40.1	- 9.7
917	40 21.67	83 45.8	1227.9 B	.10083	.21259	+ 3.7	-38.1	- 7.5
918	40 25.16	83 54.6	1014.0 B	.12624	.21778	+ 3.8	-30.7	- 0.7
919	40 28.63	83 55.4	993.2 B	.12412	.22292	- 5.4	-39.2	- 9.6
920	40 32.56	83 57.4	1046	.11895	.22876	-11.4	-47.1	-18.1
921	40 36.92	83 58.5	1074	.11591	.23525	-18.3	-54.0	-25.8
922	40 40.40	83 58.6	974	.12550	.24041	-23.3	-56.5	-28.7
923	40 42.58	83 55.4	993.0 B	.12243	.24279	-27.0	-60.8	-33.1
924	40 45.54	83 56.9	927.5 B	.13048	.24806	-30.3	-61.9	-34.7
925	40 47.31	84 05.6	822.5 B	.14647	.25069	-26.8	-54.9	-27.9
926	40 44.61	84 06.4	883.2 B	.14336	.24668	-20.2	-50.3	-23.0
927	40 45.75	84 10.9	827.8 B	.15379	.24838	-16.7	-44.9	-17.8
928	40 41.22	84 07.7	891	.14083	.24164	-17.0	-47.4	-19.8
929	40 37.73	84 08.6	917	.13849	.23644	-11.7	-42.9	-14.9
930	40 34.44	84 11.4	893.7 B	.14206	.23090	- 4.8	-35.2	- 6.9
931	40 30.70	84 11.2	952	.14002	.22600	+ 3.6	-28.9	- 0.2
932	40 28.08	84 10.8	1003.3 B	.13895	.22211	+11.2	-23.0	+ 6.0
933	40 23.78	84 10.5	1029.8 B	.13723	.21573	+18.4	-16.7	+12.7
934	40 19.87	84 10.4	1036.2 B	.13935	.20993	+26.9	- 8.4	+21.2
935	40 17.14	84 09.3	960.3 B	.13984	.20588	+24.3	- 8.4	+21.5
936	40 21.01	84 21.5	959.3 B	.13776	.21161	+16.4	-16.3	+13.0
937	40 24.47	84 21.6	972	.13824	.21676	+12.9	-20.2	+ 8.8
938	40 28.81	84 23.9	901.0 B	.14520	.22319	+ 6.8	-23.9	+ 4.7
939	40 32.28	84 23.4	870.3 B	.14884	.22835	+ 2.4	-27.3	+ 1.0
940	40 36.72	84 23.8	841.7	.15597	.23495	+ 0.2	-28.5	- 0.5
941	40 40.66	84 22.7	863	.15611	.24080	- 2.8	-32.2	- 4.6
942	40 42.86	84 20.9	828.9 B	.15861	.24407	- 7.5	-35.7	- 8.5
943	40 47.16	84 20.1	798	.15812	.25047	-17.3	-44.5	-17.6
944	40 51.75	84 35.9	783.7 B	.18233	.25730	- 1.2	-28.0	- 1.5
945	40 47.18	84 46.7	828.5 B	.18596	.25050	+13.4	-14.8	+12.2
946	40 43.70	84 47.3	810.5 B	.17372	.24532	+ 4.6	-23.0	+ 4.3
947	40 39.33	84 47.1	830.9 B	.16525	.23882	+ 4.6	-23.7	+ 3.9
948	40 35.84	84 47.1	869.9 B	.15952	.23364	+ 7.7	-21.9	+ 6.0
949	40 31.71	84 47.1	888.7 B	.15407	.22751	+10.2	-20.1	+ 8.0
950	40 27.08	84 47.1	927.0 B	.14633	.22063	+12.9	-18.7	+ 9.6
951	40 23.25	84 46.1	988.8 B	.13018	.21494	+ 8.2	-25.4	+ 3.1
952	40 21.13	84 39.1	987.5	.12614	.21179	+ 7.2	-26.4	+ 2.3
953	40 25.05	84 38.3	970.5 B	.13456	.21761	+ 8.2	-24.8	+ 3.8
954	40 28.85	84 37.7	911.0 B	.14274	.22325	+ 5.2	-25.9	+ 2.6
955	40 32.74	84 34.3	874.5 B	.15299	.22903	+ 6.2	-23.6	+ 4.5
956	40 32.80	84 32.8	885.2 B	.15155	.22912	+ 5.7	-24.5	+ 3.6
957	40 36.70	84 34.3	841	.16377	.23492	+ 8.0	-20.7	+ 7.2
958	40 41.07	84 34.3	808.5	.17376	.24141	+ 8.4	-19.2	+ 8.2
959	40 45.42	84 35.4	816.5	.17909	.24788	+ 8.0	-19.8	+ 7.2
960	40 48.93	84 35.5	804.5	.17860	.25310	+ 1.2	-26.2	+ 0.5
961	39 48.30	84 47.5	1117.3 B	.04405	.16316	-14.0	-52.1	-22.4
965	40 01.22	84 49.7	1219.4 B	.06237	.18229	-19.2	-60.8	-31.4
966	40 05.59	84 49.6	1144.4 B	.07742	.18875	- 3.7	-42.7	-13.5
967	40 09.98	84 49.5	1124.8 B	.08902	.19526	- 0.4	-38.8	- 9.8
968	40 13.43	84 47.0	1074.5	.10153	.20038	+ 2.2	-34.4	- 5.5
969	40 17.69	84 46.5	1016	.11749	.20669	+ 6.4	-28.2	+ 0.6
970	40 20.29	84 46.5	1068.5	.12075	.21055	+10.7	-25.7	+ 4.0
971	40 16.85	84 38.4	1036.0 B	.11954	.20545	+11.5	-23.8	+ 5.2
972	40 12.70	84 38.5	1008.8 B	.11347	.19930	+ 9.1	-25.3	+ 3.8
973	40 08.18	84 38.8	1033.3 B	.09346	.19260	- 1.9	-37.2	- 7.8
974	40 04.68	84 38.9	1046	.08131	.18741	- 7.7	-43.4	-13.9
975	40 00.31	84 39.8	1091.1 B	.06974	.18094	- 8.6	-45.8	-16.2
976	39 57.64	84 38.9	1084.6 B	.06542	.17699	- 9.6	-46.5	-16.8
977	39 53.92	84 37.6	1092.8 B	.05878	.17148	- 9.9	-47.2	-17.3
978	39 49.94	84 37.8	1118.7 B	.04934	.16559	-11.0	-49.1	-19.2
979	39 56.08	84 25.0	1010	.09279	.17468	+13.1	-21.3	+ 8.8
980	39 59.41	84 24.5	973.2 B	.10608	.17961	+18.0	-15.2	+14.8
981	40 04.38	84 24.9	989	.11773	.18696	+23.8	- 9.9	+20.0
982	40 07.89	84 25.7	993.0 B	.12516	.19217	+26.4	- 7.4	+22.4
983	40 10.15	84 21.3	956	.13286	.19551	+27.3	- 5.3	+24.3
984	40 13.66	84 22.6	971.5	.13394	.20072	+24.6	- 8.5	+21.1
985	40 17.44	84 22.6	994.5	.14140	.20632	+28.6	- 5.3	+24.1

No.	Latitude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T = 30 Km, in mgal
986	40° 12'.54	84° 11'.5	987.5	980.13150	980.19906	+25.3	- 8.3	+21.7
987	40 08.78	84 14.5	873.9 B	.13607	.19349	+24.8	- 5.0	+25.0
988	40 04.63	84 14.4	904	.12290	.18733	+20.6	-10.2	+20.0
989	40 02.48	84 12.3	838.0 B	.11866	.18415	+13.3	-15.2	+15.2
990	39 57.66	84 10.4	826.8 B	.11134	.17702	+12.0	-16.1	+14.2
991	39 54.50	84 12.5	1001.7 B	.09396	.17160	+16.6	-17.6	+12.6
992	39 53.45	84 11.4	977.6 B	.09396	.17079	+15.1	-18.2	+11.8
993	39 57.91	84 00.7	959	.07969	.17739	- 7.5	-40.2	-10.0
994	40 01.85	83 59.8	1131.5	.06946	.18322	- 7.3	-45.9	-15.6
995	40 06.00	83 59.4	1207	.07502	.18937	- 0.8	-41.9	-11.4
996	40 10.57	83 59.0	1173.2 B	.10110	.19614	+15.3	-24.7	+ 5.7
997	40 14.60	83 59.8	1105	.12380	.20211	+25.6	-12.0	+18.3
998	40 17.98	83 58.2	1057.5 B	.13006	.20712	+22.4	-13.6	+16.6
999	40 21.33	83 56.5	992	.13203	.21209	+13.2	-20.6	+ 9.6
1000	40 17.35	83 46.8	1134	.10758	.20619	+ 8.1	-30.6	+ 0.2
1001	40 14.16	83 45.1	1086.0 B	.09679	.20146	- 2.5	-39.5	- 8.7
1002	40 10.14	83 43.5	1078.0 B	.09067	.19550	- 3.4	-40.2	- 9.2
1003	40 07.80	83 44.5	1055	.08662	.19203	- 6.2	-42.1	-11.1
1004	40 06.55	83 45.2	1054.7 B	.08306	.19018	- 7.9	-43.8	-12.8
1005	40 03.50	83 47.4	991.3 B	.07808	.18566	-14.3	-48.1	-17.4
1006	39 59.25	83 48.5	955.2 B	.07342	.17937	-16.1	-48.6	-18.1
1007	39 59.20	83 37.5	1123	.08272	.17930	+ 9.0	-29.2	+ 1.5
1008	40 02.93	83 34.1	1169	.08623	.18482	+11.4	-28.5	+ 2.2
1009	40 06.08	83 32.6	1103	.10741	.18949	+21.7	-15.9	+14.7
1010	40 10.47	83 31.5	1042.4 B	.11133	.19599	+13.4	-22.1	+ 8.5
1011	40 13.38	83 32.2	1086.7 B	.10647	.20030	+ 8.4	-28.6	+ 2.1
1012	40 16.57	83 33.9	1122.8 B	.09738	.20504	- 2.0	-40.3	- 9.5
1013	39 17.05	83 35.7	1129.8 B	.03523	.11704	+24.5	-14.0	+15.3
1014	39 19.96	83 36.5	1117.6 B	.04530	.12133	+29.1	- 9.0	+20.4
1015	39 24.59	83 36.6	1104	.06524	.12816	+40.9	+ 3.3	+32.9
1016	39 29.21	83 38.7	1050.7 B	.07257	.13497	+36.4	+ 0.6	+30.3
1017	39 33.80	83 36.6	1034.5	.07658	.14174	+32.2	- 3.1	+26.9
1018	39 32.61	83 26.6	980.0 B	.10069	.13998	+52.9	+19.5	+49.3
1019	39 29.30	83 23.6	968	.09038	.13510	+46.3	+13.3	+42.9
1020	39 24.67	83 22.4	935	.06535	.12828	+25.0	- 6.8	+22.6
1021	39 20.82	83 22.5	883.4 B	.05633	.12260	+16.8	-13.3	+16.0
1022	39 17.00	83 26.1	795	.05792	.11697	+15.7	-11.4	+18.0
1023	39 13.91	83 16.3	724.3 B	.04489	.11242	+ 0.6	-24.1	+ 4.8
1024	39 16.59	83 14.6	768.8 B	.04498	.11637	+ 0.9	-25.3	+ 3.5
1025	39 20.90	83 12.3	899.4 B	.04050	.12272	+ 2.4	-28.3	+ 0.4
1026	39 25.29	83 11.0	778	.05568	.12919	- 0.3	-26.8	+ 1.8
1027	39 28.12	83 09.4	772	.05753	.13336	- 3.2	-29.5	- 0.9
1028	39 31.37	83 08.0	781.5	.06097	.13816	- 3.7	-30.3	- 1.5
1029	39 34.98	83 07.2	770.3 B	.06960	.14349	- 1.4	-27.7	+ 1.2
1030	39 39.37	83 07.2	786.2 B	.07261	.14997	- 3.4	-30.2	- 1.1
1031	39 41.80	83 06.9	745.3 B	.07699	.15356	- 6.5	-31.9	- 2.7
1032	39 43.85	83 09.5	845.5 B	.09179	.15659	+14.7	-14.1	+15.3
1033	39 32.20	82 56.0	727	.04324	.13938	-27.8	-52.5	-23.9
1034	39 28.36	82 54.7	796.8 B	.03046	.13371	-28.3	-55.4	-27.0
1035	39 24.38	82 56.5	730	.02805	.12785	-31.1	-56.0	-27.7
1036	39 21.96	82 58.7	635	980.03297	.12428	-31.6	-53.2	-24.9
1037	38 29.54	82 18.8	549	979.97782	.04725	-17.8	-36.5	- 6.2
1038	38 26.42	82 22.6	556	979.97176	.04267	-18.6	-37.6	- 7.2
1039	39 12.03	84 03.2	913	980.00197	.10965	-21.8	-52.9	-24.8
1040	39 15.30	84 00.6	947.0 B	.01740	.11447	- 8.0	-40.3	-11.9
1041	39 18.50	84 02.2	920	.02058	.11918	-12.1	-43.4	-15.0
1042	39 21.40	84 05.8	859	.02708	.12345	-15.6	-44.8	-16.5
1043	39 27.66	82 13.9	691.8 B	.04898	.13268	-18.6	-42.2	-13.1
1044	39 30.69	82 15.4	718	.05497	.13715	-14.6	-39.1	- 9.9
1045	39 34.93	82 14.1	862.1 B	.05410	.14204	- 6.8	-36.2	- 6.9
1046	39 17.39	82 44.3	646	.04156	.11754	-15.2	-37.2	- 9.2
1047	39 22.43	82 43.8	712	.02927	.12497	-28.7	-53.0	-24.6
1048	39 25.77	82 44.6	880	.02263	.12989	-24.5	-54.5	-25.9
1049	39 29.73	82 43.5	772.0 B	.04000	.13574	-23.1	-49.4	-20.7
1050	39 33.00	82 40.3	888.3 B	.04072	.14056	-16.3	-46.6	-17.8

No.	Latitude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T = 30 Km, in mgal
1051	39° 35.48'	82° 44.2'	1099.5 B	980.03158	980.14423	- 9.2	-46.7	-17.9
1052	39 16.37	82 36.2	671.4 B	.03495	.11605	-18.0	-40.8	-12.6
1053	39 19.48	82 35.5	1033.5	.01299	.11992	- 9.7	-44.9	-16.4
1054	39 23.70	82 35.7	756.5	.03292	.12684	-22.8	-48.5	-19.5
1055	39 27.36	82 34.0	756	.03741	.13224	-23.7	-49.5	-20.4
1056	39 29.98	82 33.9	1114.1	.01708	.13610	-14.3	-52.2	-23.2
1057	39 33.05	82 32.9	809.5	.03854	.14063	-26.0	-53.5	-24.5
1058	39 37.38	82 33.0	766.9	.04588	.14703	-29.0	-55.1	-26.2
1059	39 40.71	82 33.5	802.5	.04793	.15195	-28.5	-55.9	-26.9
1060	39 38.89	82 21.8	818	.04970	.14926	-22.6	-50.5	-21.2
1061	39 35.40	82 21.0	762.7 B	.05363	.14411	-18.7	-44.7	-15.5
1062	39 32.47	82 24.5	744.4 B	.04794	.13977	-21.8	-47.2	-17.9
1063	39 28.29	82 26.0	829	.03438	.13361	-21.2	-49.5	-20.3
1064	39 23.60	82 27.4	964	.02087	.12669	-15.1	-48.0	-19.0
1065	39 19.73	82 27.7	748.4 B	.03151	.12100	-19.1	-44.6	-15.9
1066	39 17.36	82 28.1	781.5	.02728	.11750	-16.7	-43.3	-14.8
1067	39 16.60	82 14.3	792	.02399	.11638	-17.9	-44.9	-16.4
1068	39 20.77	82 14.8	732	.03567	.12252	-18.0	-42.9	-14.3
1069	39 24.27	82 14.0	742	.03960	.12769	-18.3	-43.6	-14.7
1070	39 39.49	82 14.0	1085	.04458	.15014	- 3.5	-40.5	-11.1
1071	39 41.35	82 12.0	1052	.04969	.15290	- 4.3	-40.1	-10.6
1072	39 42.74	82 12.5	958.1	.05667	.15495	-12.4	-45.1	-15.6
1073	39 47.49	82 14.2	1088	.05275	.16197	- 6.9	-44.0	-14.4
1074	39 41.51	82 06.8	792.5	.07165	.15313	- 6.9	-34.0	- 4.4
1075	39 37.56	82 04.9	947	.05553	.14730	- 2.7	-35.0	- 5.5
1076	39 33.98	82 03.6	894.5	.05158	.14201	- 6.3	-36.8	- 7.4
1077	39 29.94	82 03.5	724.5	.05251	.13605	-15.4	-40.1	-10.8
1078	39 25.96	82 05.8	677.5	.04689	.13018	-19.6	-42.6	-13.6
1079	39 23.40	82 08.6	662	.04371	.12640	-20.4	-43.0	-14.2
1080	39 26.53	81 54.5	645.5	.04314	.13101	-27.2	-49.2	-19.6
1081	39 29.28	81 51.1	974.5 B	.02750	.13507	-15.9	-49.1	-19.2
1082	39 32.67	81 51.2	1014.2 B	.03032	.14007	-14.4	-48.9	-18.9
1083	39 35.60	81 51.8	1013	.03653	.14441	-12.6	-47.1	-17.0
1084	39 39.24	81 49.6	1009	.04421	.14977	-10.6	-45.0	-14.6
1085	39 31.98	81 38.7	667.5	.04366	.13906	-32.6	-55.4	-24.8
1086	39 27.83	81 38.1	674	.03834	.13293	-31.2	-54.2	-23.5
1087	39 35.45	81 39.1	735	.04546	.14418	-29.6	-54.6	-23.7
1088	39 56.22	81 41.8	1022.0 B	.07223	.17489	- 6.5	-41.4	-10.3
1089	39 52.83	81 41.1	1071	.06199	.16987	- 7.1	-43.6	-12.4
1090	39 48.81	81 40.4	888	.06367	.16392	-16.7	-47.0	-15.5
1091	39 45.48	81 40.3	793	.06104	.15900	-23.4	-50.4	-18.9
1092	39 42.10	81 43.5	998	.04385	.15401	-16.3	-50.3	-19.2
1093	39 38.97	81 41.0	968	.03833	.14938	-20.0	-53.0	-22.0
1094	39 42.82	81 51.0	872	.06034	.15507	-12.7	-42.4	-11.9
1095	39 46.20	81 49.8	1107	.05106	.16007	- 4.9	-42.6	-12.0
1096	39 50.36	81 51.2	813.5	.07989	.16621	- 9.8	-37.5	- 6.9
1097	39 54.55	81 51.8	712.5	.09278	.17241	-12.6	-36.9	- 6.2
1098	39 29.61	81 17.9	650.5	.04381	.13556	-30.6	-52.7	-19.7
1099	39 33.77	81 18.4	1069	.03173	.14170	- 9.4	-45.8	-12.8
1100	39 36.83	81 19.9	1057	.02794	.14622	-18.9	-54.9	-22.1
1101	39 40.39	81 20.1	806.8 B	.06159	.15148	-14.0	-41.5	- 8.7
1102	39 44.25	81 20.0	807	.06238	.15718	-18.9	-46.4	-13.4
1103	39 42.17	81 30.2	703.0 B	.06281	.15411	-25.2	-49.1	-17.1
1104	39 39.35	81 28.2	681.1 B	.05810	.14994	-27.8	-51.0	-19.0
1105	39 36.42	81 25.1	662.5 B	.05593	.14561	-27.4	-49.9	-17.8
1106	39 32.20	81 23.7	774	.04252	.13938	-24.1	-50.4	-18.2
1107	39 28.13	81 23.9	618.6 B	.04245	.13337	-32.7	-53.8	-21.5
1108	39 33.51	81 01.6	663	.05339	.14131	-25.6	-48.2	-12.2
1109	39 37.16	81 02.9	736	.05655	.14671	-20.9	-46.0	-10.5
1110	39 40.50	81 04.8	1054	.04423	.15164	- 8.3	-44.2	- 9.1
1111	39 43.79	81 07.3	739	.06750	.15650	-19.5	-44.7	-10.2
1112	39 47.45	80 53.4	1334	.04299	.16192	+ 6.6	-38.9	- 2.0
1113	39 49.82	80 49.6	649	.08007	.16541	-24.3	-46.4	- 9.1
1114	39 54.25	80 48.6	686 A	.08045	.17197	-27.0	-50.4	-13.1
1115	39 57.70	80 46.3	670	.08054	.17708	-33.5	-56.4	-19.1

No.	Latitude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T = 30 Km, in mgal
1116	40° 01.'00	80° 44.'7	672	980.08164	980.18196	-37.1	-60.0	-23.0
1117	39 22.11	81 52.8	616.5	.03558	.12450	-30.9	-51.9	-22.2
1118	39 18.36	81 54.1	607.5	.02990	.11897	-31.9	-52.6	-22.8
1119	39 14.18	81 53.3	902.5	980.00263	.11871	-31.2	-61.9	-31.9
1120	39 10.79	81 50.8	841.5	979.99684	.10782	-31.8	-60.5	-30.4
1121	39 07.54	81 46.6	833.5	979.99409	.10303	-30.5	-58.9	-28.1
1122	39 03.70	81 48.8	575	980.00506	.09739	-38.2	-57.8	-27.1
1123	39 00.70	81 45.7	598.0	980.00161	.09297	-35.1	-55.5	-24.5
1124	38 57.04	81 48.3	613.5	979.99677	.08759	-33.1	-54.0	-23.1
1125	38 54.17	81 51.1	570.5	979.99808	.08338	-31.6	-51.1	-20.3
1126	39 16.02	81 33.6	615.5 B	980.01925	.11553	-38.4	-59.4	-27.7
1127	39 16.02	81 33.6	607	.01996	.11553	-38.5	-59.2	-27.5
1128	39 16.98	81 39.3	631.5	.01701	.11694	-40.5	-62.0	-31.0
1129	39 20.53	81 40.3	756	.01579	.12217	-35.3	-61.0	-30.2
1130	39 16.24	82 04.2	759.5	.02303	.11585	-25.3	-51.2	-22.3
1131	39 13.53	82 02.3	811.5	.01418	.11189	-21.4	-49.0	-19.9
1132	39 09.55	82 02.3	758	.01230	.10600	-22.4	-48.2	-19.0
1133	39 06.31	81 59.7	741.5	.00754	.10123	-23.9	-49.2	-19.7
1134	39 02.34	81 59.8	567	.01374	.09538	-28.3	-47.6	-18.0
1135	38 59.95	82 03.4	573.3 B	.01232	.09187	-25.6	-45.2	-15.9
1136	38 56.70	82 06.7	573.8 B	.01031	.08709	-22.8	-42.4	-13.3
1137	38 52.96	82 08.8	567	.00796	.08160	-20.3	-39.6	-10.4
1138	38 50.81	82 08.8	605.4 B	.00273	.07844	-18.8	-39.4	-10.1
1139	38 48.76	82 12.0	579.1 B	.00242	.07543	-18.5	-38.3	- 9.0
1140	38 59.75	81 55.8	558.5	.00718	.09157	-31.9	-50.9	-20.8
1141	38 55.81	81 53.8	568	.00881	.08579	-23.6	-42.9	-12.5
1142	39 10.98	82 08.9	763.8 B	.01330	.10810	-23.0	-49.0	-21.3
1143	39 06.68	82 07.9	641	.01542	.10177	-26.1	-47.9	-19.2
1144	39 02.43	82 08.8	585	.01531	.09551	-25.2	-45.1	-16.3
1145	39 02.07	82 14.3	697	.00543	.09498	-24.0	-47.7	-19.2
1146	39 00.34	82 19.1	616	980.00689	.09244	-27.6	-48.6	-20.2
1147	38 56.84	82 19.6	713.8 B	979.99666	.08729	-21.8	-46.7	-18.3
1148	38 53.38	82 16.1	710	979.99583	.08222	-19.6	-43.8	-15.0
1149	38 51.00	82 14.2	569.9 B	980.00517	.07872	-19.9	-39.4	-10.4
1150	38 53.17	82 22.7	667.3 B	979.99640	.08191	-22.7	-45.5	-17.1
1151	38 54.83	82 27.6	690	980.00121	.08435	-18.2	-41.8	-13.8
1152	38 57.95	82 29.9	865	979.99655	.08893	-11.0	-40.5	-12.6
1153	39 02.28	82 32.3	676	980.01427	.09529	-17.4	-40.5	-12.8
1154	39 04.78	82 29.5	691	.01530	.09898	-18.7	-42.2	-14.4
1155	39 05.25	82 24.2	643	.01507	.09967	-24.1	-46.0	-17.8
1156	39 08.72	82 22.3	680.5	.01792	.10478	-22.8	-46.0	-17.8
1157	39 10.62	82 26.7	918.5	.00936	.10757	-11.8	-43.1	-14.9
1158	39 12.68	82 33.4	759	.02690	.11061	-12.3	-38.2	-10.2
1159	39 09.34	82 33.1	736	.01881	.10569	-17.6	-42.7	-14.8
1160	39 05.83	82 36.6	702.8 B	.01335	.10552	-26.1	-50.0	-22.3
1161	39 03.11	82 38.3	700.3 B	.00865	.09652	-22.0	-45.9	-18.3
1162	38 59.29	82 36.3	674.5	.00962	.09090	-17.8	-40.8	-13.1
1163	38 55.88	82 33.9	693.4 B	.00759	.08589	-13.1	-36.7	- 9.0
1164	38 51.70	82 36.0	687.6 B	.00425	.07975	-10.8	-34.2	- 6.5
1165	39 01.43	82 49.7	665.0 B	980.00716	.09404	-24.3	-47.0	-19.6
1166	39 05.02	82 48.3	1015	979.98933	.09933	-14.5	-49.1	-21.6
1167	39 08.54	82 51.8	574	980.02442	.10451	-26.1	-45.7	-18.0
1168	39 12.11	82 48.9	594	.02907	.10977	-24.8	-45.1	-17.4
1169	39 16.08	82 57.9	617	.03015	.11562	-27.4	-48.5	-20.4
1170	39 11.65	82 58.7	662.5 B	.02685	.10909	-19.9	-42.5	-14.5
1171	39 07.23	82 58.7	579.0 B	.03318	.10258	-14.9	-34.7	- 6.7
1172	39 04.12	83 00.9	578.9 B	.02891	.09801	-14.6	-34.4	- 6.3
1173	39 00.56	83 01.4	573.3 B	.02211	.09276	-16.7	-36.3	- 8.3
1174	38 56.75	83 01.4	560.9 B	.02080	.08716	-13.6	-32.7	- 4.8
1175	39 02.93	83 07.7	926.5 B	.01134	.09625	+ 2.2	-29.3	- 1.0
1176	39 05.99	83 09.7	600.5	.03265	.10776	-18.6	-39.1	-10.6
1177	39 10.38	83 10.5	764	.02420	.10722	-11.2	-37.2	- 8.7
1178	39 13.87	83 10.1	741	.02842	.11236	-14.2	-39.5	-10.9
1179	39 10.04	83 24.4	964.6	.03530	.10672	+19.3	-13.6	+15.5
1180	39 06.08	83 24.2	891.5	.03425	.10089	+17.2	-13.2	+15.7

No.	Latitude ϕ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T = 30 Km, in mgal
1181	39° 01'.88	83° 21'.7	815	980.02997	980.09471	+11.9	-15.8	+12.8
1182	38 58.21	83 23.7	867	980.01583	.08931	+ 8.1	-21.5	+ 6.9
1183	38 54.49	83 26.4	882	979.99294	.08385	- 8.0	-38.0	- 9.8
1184	38 51.35	83 28.3	610.5	980.00011	.07923	-21.7	-42.5	-14.4
1184a	38 59.03	84 13.9	814.0 B	979.98656	.09051	-27.4	-55.1	-29.0
1185	38 52.00	83 47.2	975.5 B	.98887	.08019	+ 0.4	-32.8	- 5.6
1186	38 55.36	83 44.9	1059.8 B	979.99937	.08513	+13.9	-22.2	+ 7.8
1187	38 59.49	83 42.9	991	980.00893	.09119	+11.0	-22.8	+ 5.5
1188	39 03.71	83 42.2	1049	.01559	.09741	+20.8	-14.9	+13.6
1189	39 06.74	83 39.3	1089	.01542	.10187	+16.0	-21.1	+ 7.5
1190	39 09.75	83 38.9	1031.5	.02156	.10629	+12.3	-22.9	+ 5.8
1191	39 15.40	83 54.2	983	.02166	.11462	- 0.5	-34.0	- 5.4
1192	39 19.49	83 54.0	998	.03262	.12064	+ 5.8	-28.2	+ 0.6
1193	39 22.38	83 51.1	1059.5	.04183	.12490	+16.6	-19.5	+ 9.5
1194	39 26.73	83 49.7	1016.9 B	.04868	.13131	+13.0	-21.6	+ 7.6
1195	39 30.33	83 50.6	1048	.04966	.13662	+11.6	-24.1	+ 5.2
1196	39 34.02	83 51.0	1005.5	.05511	.14207	+ 7.6	-26.6	+ 2.8
1197	39 38.10	83 52.2	945	.06430	.14810	+ 5.1	-27.1	+ 2.4
1198	39 04.66	84 10.6	594.7 B	.00446	.09880	-38.4	-58.7	-31.8
1199	39 01.12	84 12.0	880.0 B	979.98427	.09359	-26.6	-56.5	-30.0
1200	38 47.34	84 08.0	B	.98921	.07735			
1201	38 54.76	84 06.1	907	.97493	.08425	-24.0	-54.9	-28.7
1202	38 57.83	84 04.8	892.0 B	.98533	.08875	-19.5	-49.9	-23.2
1203	39 00.86	84 02.5	896	.99138	.09321	-17.5	-48.1	-20.9
1204	39 04.08	84 03.5	895	979.99488	.09795	-18.9	-49.4	-21.8
1205	39 25.12	84 03.9	983	980.03219	.12894	- 4.3	-37.8	- 9.3
1206	39 28.24	84 03.2	937.1	.04384	.13353	- 1.5	-33.5	- 4.8
1207	39 31.85	84 05.2	754.1 B	.06135	.13887	- 6.6	-32.3	- 3.7
1208	39 26.38	81 14.8	784	.03088	.13079	-26.2	-52.9	-19.9
1500	41 24.00	81 51.0	792	.23190	.30535	+ 1.0	-25.9	+ 0.3
1501	41 15.00	80 40.0	1183.1	.18260	.29192	+ 2.0	-36.7	- 3.7
1502	40 43.00	80 38.0	991	.12338	.24428	-27.7	-61.5	-25.7
1503	40 03.00	80 58.0	1196	.06655	.18492	- 5.9	-46.6	-11.0
1504	39 20.80	81 26.8	857	.01705	.12257	-24.9	-54.1	-21.9
1505	39 20.00	82 04.0	639	.03771	.12139	-23.6	-45.4	-16.7
1506	41 35.00	84 34.0	891	.24112	.32176	+ 3.2	-27.2	- 1.0
1507	40 04.50	83 04.4	901	.10147	.18714	- 0.9	-31.6	- 1.5
2001	40 00.00	83 00.9	760.0 B	.09447	.18048	-14.5	-40.4	-10.6
2002	40 02.16	83 06.2	811	.10748	.18368	+ 0.1	-27.6	+ 2.2
2003	40 01.98	83 10.7	938.0	.10277	.18341	+ 7.6	-24.4	+ 5.0
2004	39 57.69	83 08.8	933.5	.09421	.17706	+ 5.0	-26.8	+ 2.9
2005	39 54.11	83 11.1	917.0	.10867	.17176	+23.2	- 8.1	+21.7
2006	39 50.40	82 32.9	886.1 B	.06033	.16627	-22.6	-52.8	-23.0
2007	39 53.94	82 32.2	912	.06399	.17151	-21.7	-52.8	-22.8
2008	39 56.43	82 28.2	891.5	.05831	.17520	-33.0	-63.4	-33.2
2009	39 48.71	81 59.2	777.0	.08311	.16377	- 7.6	-34.0	- 3.9
2010	39 44.53	82 03.1	974.0	.06607	.15759	+ 0.1	-33.1	- 3.2
2011	40 02.03	82 54.6	839.0	.08248	.18348	-22.1	-50.7	-20.6
2012	41 32.04	81 20.2	1212.0	.22453	.31735	+21.2	-20.1	+ 7.5
2012a	41 41.14	81 05.8	1071.0	.23503	.33093	+ 4.8	-31.7	- 5.2
2013	41 43.76	81 10.9	747.0	.26424	.33485	- 0.4	-25.8	+ 0.4
2014	41 38.44	81 17.4	1022.0	.24629	.32690	+15.5	-19.3	+ 7.4
2015	41 29.17	81 33.8	961.0	.22080	.31306	- 1.9	-34.6	- 7.9
2016	40 31.84	81 01.4	1292.0	.10701	.22770	+ 0.8	-43.2	- 8.3
2017	40 37.15	80 55.7	1261.0	.11172	.23558	- 5.2	-48.2	-13.0
2018	40 38.06	80 45.5	1184.0	.10566	.23694	-19.9	-60.3	-24.7
2019	40 34.67	81 12.4	1056.0	.12718	.23190	- 5.4	-41.4	- 7.4
2020	40 36.37	81 20.3	916.0	.15200	.23443	+ 3.7	-27.5	+ 6.1
2021	40 40.20	81 23.1	986.0	.15685	.24012	+ 9.5	-24.1	+ 9.3
2022	40 34.34	81 24.2	889.0	.15023	.23141	+ 2.4	-27.8	+ 5.6
2023	40 16.45	81 51.9	775.4 B	.12940	.20486	- 2.5	-28.9	+ 3.6
2024	40 12.64	81 58.3	804.0	.12123	.19921	- 2.4	-29.8	+ 1.9
2025	40 13.72	82 04.7	816.0	.12515	.20081	+ 1.1	-26.7	+ 4.8
2026	40 14.16	82 08.4	845.5	.12208	.20146	+ 0.2	-28.7	+ 2.5
2027	40 17.54	82 10.9	1156.0	.10833	.20647	+10.6	-28.8	+ 2.6
2028	40 20.24	82 09.2	1212.0	.11145	.21048	+15.0	-26.3	+ 5.3
2029	40 24.57	82 11.6	853.0	.13831	.21691	+ 1.6	-27.4	+ 4.4
2030	40 28.15	82 11.6	896.3 B	.14126	.22221	+ 3.4	-27.2	+ 4.7

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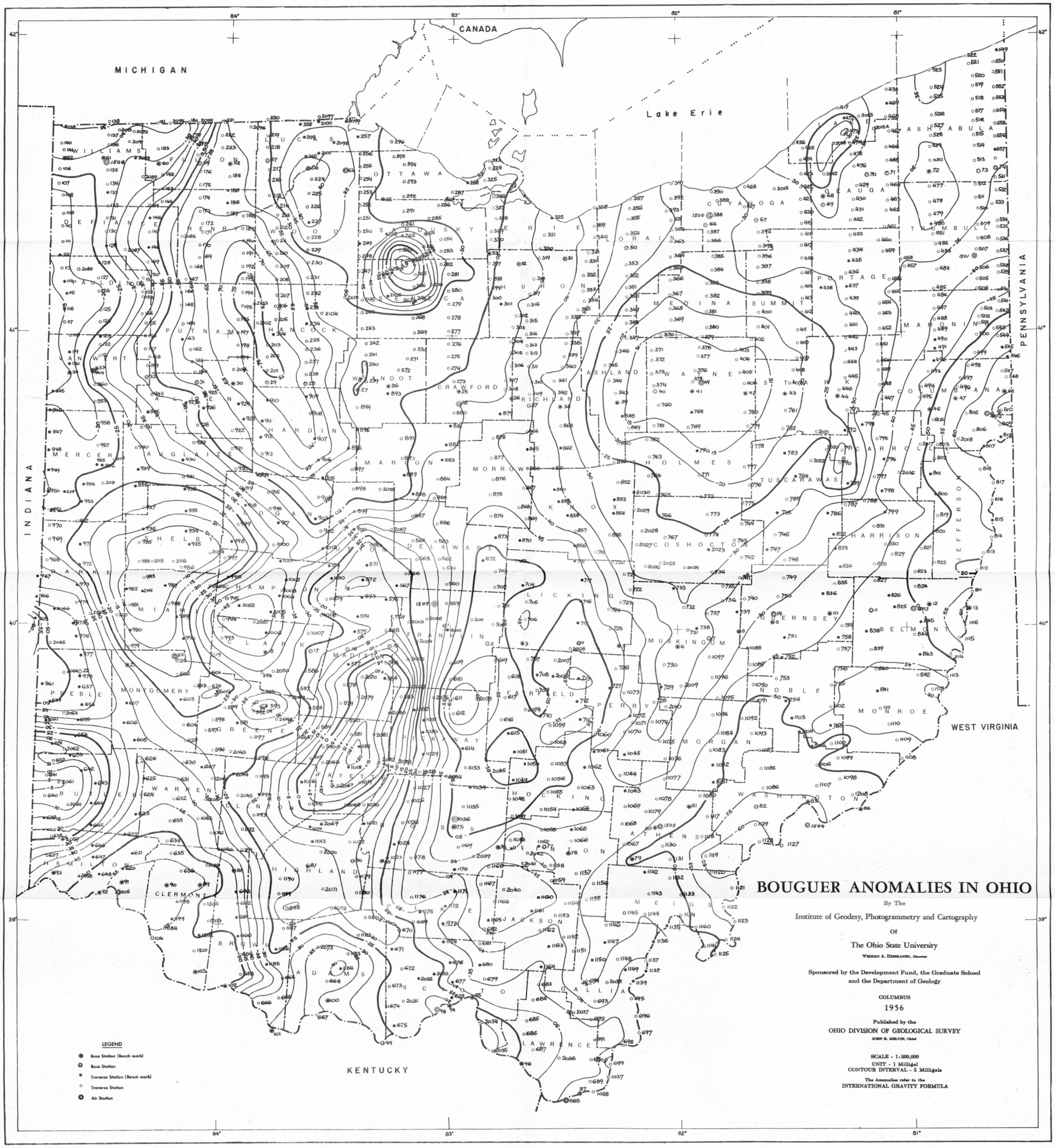
2031	38° 44'.69	83° 12'.0	764.5	980.00088	980.06947	+ 3.3	-22.7	+ 5.8
2032	38 49.26	83 08.0	720.0 B	.01098	.07616	+ 2.5	-22.0	+ 6.2
2033	38 50.08	83 03.9	576 B	.02057	.07737	- 2.6	-22.2	+ 5.8
2034	38 40.40	82 51.4	551	.01049	.06317	- 0.8	-19.6	+ 8.9
2035	38 34.41	82 48.6	549	980.00196	.05438	- 0.8	-19.5	+ 9.6
2036	38 33.04	82 31.4	674	979.98184	.05238	- 7.1	-30.1	- 0.5
2037	38 42.41	82 27.6	612	.99421	.06611	-14.3	-35.2	- 6.2
2038	38 48.43	82 19.0	652	979.99276	.07495	-20.9	-43.1	-14.1
2039	39 14.07	82 53.8	596	980.03186	.11265	-24.7	-45.0	-17.1
2040	39 07.39	82 46.0	650.5	.01459	.10281	-27.0	-49.2	-21.8
2041	39 12.51	82 41.0	624.5	.02824	.11036	-23.4	-44.7	-16.8
2042	39 14.88	82 39.5	685	.03055	.11385	-18.9	-42.2	-14.2
2043	39 34.99	83 57.7	954	.06016	.14350	+ 6.4	-26.1	+ 3.0
2044	39 30.63	83 56.6	1009.5	.05148	.13706	+ 9.4	-25.0	+ 4.0
2045	39 26.19	83 55.6	972	.05147	.13051	+12.4	-20.7	+ 8.3
2046	39 33.13	83 33.2	1028.5	.08593	.14075	+41.9	- 6.9	+23.1
2047	39 38.33	83 39.8	1076	.05992	.14844	+12.7	-24.0	+ 6.1
2048	39 41.74	83 45.4	1061	.05446	.15347	+ 0.8	-35.4	- 5.4
2049	39 46.73	83 42.0	1102	.06272	.16085	+ 5.5	-32.0	- 1.6
2050	39 51.43	83 46.4	1103	.06912	.16780	+ 5.1	-32.5	- 2.2
2051	40 01.06	83 51.9	1001	.07426	.18353	-15.1	-49.2	-18.7
2052	40 04.63	83 55.9	1176.1 B	.06991	.18733	- 6.8	-46.9	-16.4
2053	40 08,54	84 03.9	1119.5	.10233	.19313	+14.5	-23.6	+ 6.8
2054	40 15.29	84 03.8	1058	.13238	.20314	+28.8	- 7.3	+22.9
2055	40 28.95	83 18.9	949	.11216	.22340	-22.0	-54.3	-24.0
2056	40 25.49	83 17.8	950.8 B	.10341	.21827	-25.4	-57.8	-27.4
2057	40 20.68	83 15.9	943	.11669	.21113	- 5.7	-37.9	- 7.6
2058	39 09.35	84 36.4	916.0 B	.00185	.10571	-17.7	-48.9	-23.6
2059	39 16.53	84 41.0	532	.05891	.11628	- 7.3	-25.5	+ 0.6
2060	39 23.83	84 39.8	651	.08051	.12703	+14.7	- 7.5	+19.5
2061	39 28.34	84 42.3	860.5	.07799	.13368	+25.2	- 4.1	+23.7
2062	39 34.93	84 41.1	1054	.06914	.14341	+24.9	-11.0	+17.4
2063	39 42.39	84 41.6	1065	.04771	.15444	- 6.6	-42.8	-13.6
2064	39 50.57	84 41.8	1142.5	.04649	.16652	-12.6	-51.5	-21.7
2065	39 56.34	84 45.5	1118.5	.05797	.17506	-11.9	-50.0	-20.4
2066	40 03.16	84 44.5	1104.1 B	.07322	.18516	- 8.1	-45.7	-16.2
2067	39 28.58	83 29.4	998.5	.09064	.13404	+50.5	+16.5	+46.3
2068	39 24.57	83 27.4	1000	.07070	.12813	+36.6	+ 2.6	+32.3
2069	39 20.59	83 33.7	1021.4 B	.05314	.12226	+27.0	- 7.9	+21.6
2070	39 14.96	83 33.6	1058.5	.03401	.11396	+19.6	-16.5	+12.9
2071	39 07.06	83 33.0	1065	.02075	.10233	+18.6	-17.7	+11.2
2072	39 03.14	83 30.6	850.5	980.02518	.09657	+ 8.6	-20.4	+ 8.4
2073	38 55.30	83 34.1	886	979.99700	.08504	- 4.7	-34.9	- 6.6
2074	39 44.08	82 40.0	862.5	980.05386	.15693	-21.9	-51.3	-22.0
2075	39 46.12	82 53.0	752	.05438	.15995	-34.8	-60.5	-31.1
2076	39 46.63	83 04.3	808	.07075	.16070	-14.0	-41.5	-12.1
2077	39 48.80	83 10.3	806	.11629	.16390	+28.2	+ 0.7	+30.3
2078	39 50.39	83 23.0	990	.11498	.16625	+41.8	+ 8.1	+38.3
2079	39 46.72	83 24.0	992.5	.10419	.16083	+36.7	+ 2.9	+33.2
2080	39 43.20	83 15.9	907.5 B	.10686	.15563	+36.6	+ 5.7	+35.5
2081	39 38.97	83 19.9	917	.10635	.14938	+43.2	+12.0	+42.0
2082	39 33.04	83 17.2	871.5	.09743	.14062	+38.8	+ 9.1	+38.3
2083	39 33.02	83 13.9	863	.08242	.14059	+23.0	- 6.4	+22.6
2084	39 30.67	83 00.8	700.5	.04754	.13712	-23.7	-47.6	-19.0
2085	39 31.86	82 49.6	905.5	.03179	.13888	-21.9	-52.8	-24.2
2086	41 19.57	84 12.3	708.5	.19762	.29874	-34.5	-58.6	-34.1
2087	41 16.52	84 27.4	709.5	.21381	.29420	-13.6	-37.8	-12.7
2088	41 12.53	84 40.5	726.5	.22319	.28824	+ 3.3	-21.5	+ 4.4
2089	41 31.27	84 23.3	717.5	.24147	.31619	- 7.2	-31.7	- 6.4
2090	41 35.19	84 25.8	792.6 B	.24388	.32204	- 3.6	-30.6	- 4.8
2091	41 38.07	84 27.3	834	.24840	.32634	+ 0.5	-27.9	- 1.8
2092	41 40.78	84 26.2	861.5	.25216	.33040	+ 2.8	-26.6	- 0.4
2093	41 40.81	84 29.7	891.5	.24381	.33044	- 2.8	-33.2	- 6.6
2094	41 42.64	84 16.2	787.5	.25226	.33318	- 6.8	-33.7	- 8.1
2095	41 42.31	84 08.8	800	.25068	.33268	- 6.8	-34.0	- 9.0

No.	Latitude φ	Longitude λ	Elevation in feet	Observed Gravity in gal	Theoret. Gravity in gal	Free Air Anomaly in mgal	Bouguer Anomaly in mgal	Airy-Heiskanen Isost. Anomaly T = 30 Km, in mgal
2096	41° 42.'02	83° 54.'8	730	980.23617	980.33225	-27.4	-52.3	-28.2
2097	41 44.10	83 36.3	607.5	.25168	.33536	-26.5	-47.2	-24.4
2098	41 39.02	83 32.1	600.4 B	.25053	.32776	-20.8	-41.2	-18.9
2099	41 43.35	83 29.0	580.7 B	.25347	.33423	-26.1	-45.9	-23.7
2100	41 43.27	83 36.3	621.2 B	.25066	.33411	-25.0	-46.2	-23.4
2101	41 36.72	83 36.2	625.1 B	.24586	.32433	-19.7	-41.0	-18.4
2102	41 02.31	83 52.0	750.5	.15048	.27301	-51.9	-77.5	-52.0
2103	41 06.08	83 52.8	749.5	.15547	.27863	-52.7	-78.2	-53.2
2104	41 04.51	83 35.0	833.5	.17216	.27629	-25.7	-54.1	-28.6
2105	41 07.57	83 28.7	797.3	.18260	.28085	-23.2	-50.4	-25.2
2106	41 07.83	83 17.1	766.8 B	.20115	.28124	- 8.0	-34.1	- 8.7
2107	41 12.37	83 19.4	733	.20650	.28800	-12.6	-37.5	-12.4
2108	41 13.36	83 16.8	725	.22216	.28948	+ 0.9	-23.8	+ 1.1
2109	41 14.22	83 10.1	692.0	.23503	.29076	+ 9.4	-14.2	+10.4
2110	41 10.11	83 05.6	778	.20959	.28463	- 1.9	-28.4	- 3.2
2111	41 17.87	83 07.8	663.6	.22230	.29621	-11.5	-34.1	-10.0
2112	41 20.45	83 17.6	699.6 B	.21104	.30005	-23.2	-47.0	-23.3
2113	39 48.24	84 07.2	797	.09498	.16307	+ 6.9	-20.3	+ 9.1
2114	40 07.12	84 21.1	932.8 B	.12900	.19103	+25.7	- 6.1	+23.8
2115	40 13.67	84 19.1	985	.13432	.20073	+26.2	- 7.3	+22.4
2116	40 13.70	84 13.5	990	.13393	.20078	+26.3	- 7.5	+22.4
2117	40 34.08	84 29.6	874	.15394	.23102	+ 5.1	-24.6	+ 3.5
2118	40 29.23	84 32.5	881	.14326	.22382	+ 2.3	-27.7	+ 0.7
2119	40 27.06	84 42.5	963.3 B	.13848	.22060	+ 8.5	-24.3	+ 4.3
2120	40 02.52	84 35.0	1053	.08289	.18421	- 2.3	-38.2	- 8.5
2121	40 02.16	84 27.9	1022.5	.10329	.18368	+15.8	-19.0	+10.9

GRAVITY MAP OF OHIO



LEGEND

- Base Station (Bench mark)
- Base Station
- Traverse Station (Bench mark)
- Traverse Station
- Air Station

BOUGUER ANOMALIES IN OHIO

By The

Institute of Geodesy, Photogrammetry and Cartography

Of

The Ohio State University

WEIKKO A. HEISKANEN, Director

Sponsored by the Development Fund, the Graduate School and the Department of Geology

COLUMBUS

1956

Published by the

OHIO DIVISION OF GEOLOGICAL SURVEY

JOHN H. MELVIN, Chief

SCALE - 1:500,000

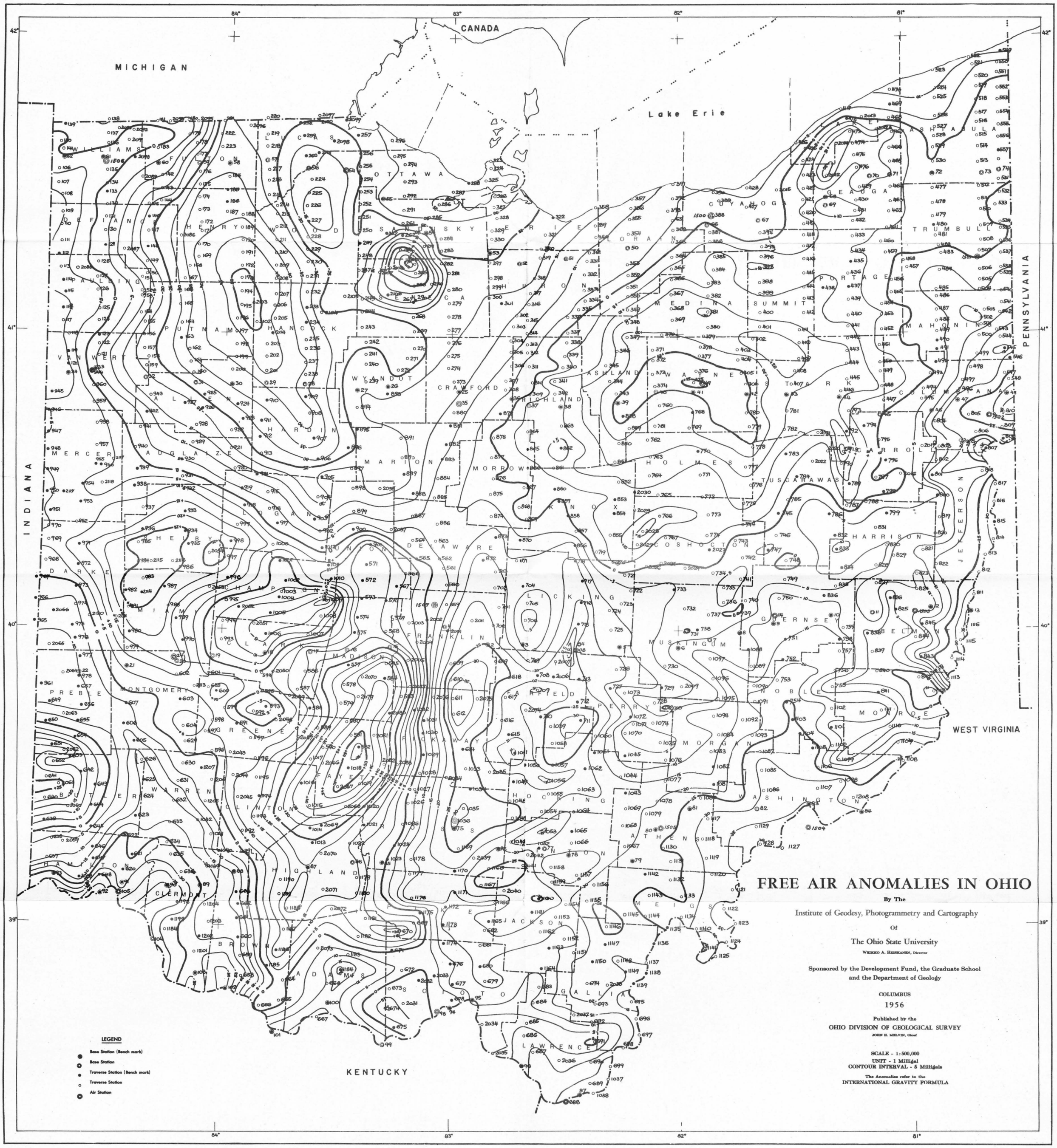
UNIT - 1 Milligal

CONTOUR INTERVAL - 5 Milligals

The Anomalies refer to the

INTERNATIONAL GRAVITY FORMULA

GRAVITY MAP OF OHIO



FREE AIR ANOMALIES IN OHIO

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LEGEND

- Base Station (Bench mark)
- Base Station
- Traverse Station (Bench mark)
- Traverse Station
- Air Station